

SMITHSONIAN Zoogoer

WINTER 2016–2017

Animal Architects

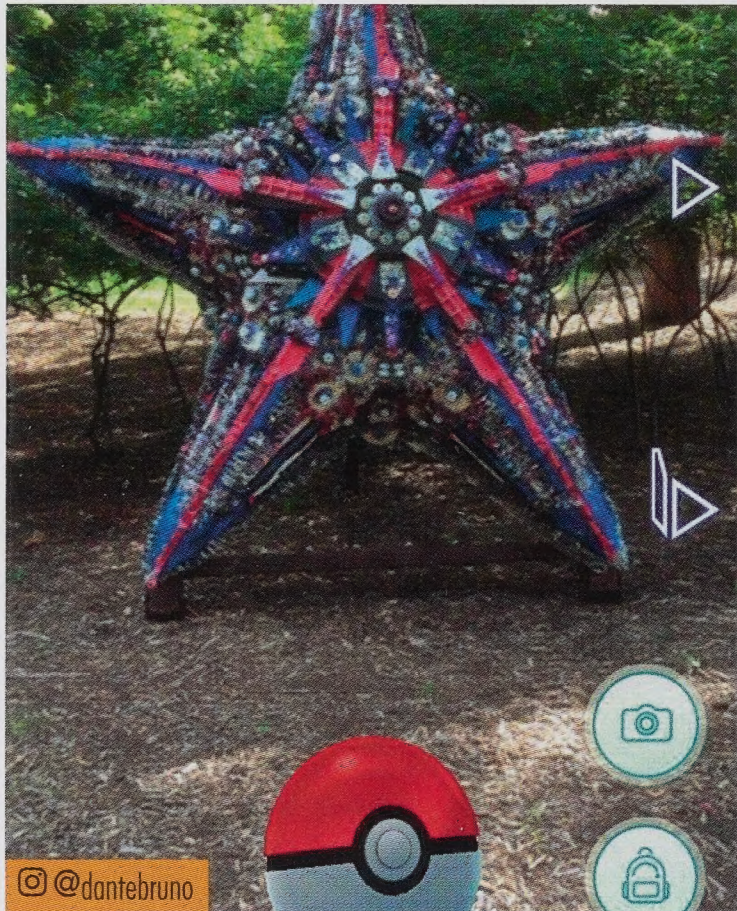
Some of the Zoo's most
industrious engineers
are its inhabitants.

- » How Zoo Staff Stay Safe
- » Kids: Animal Heavyweights
- » 2017 Wall Calendar

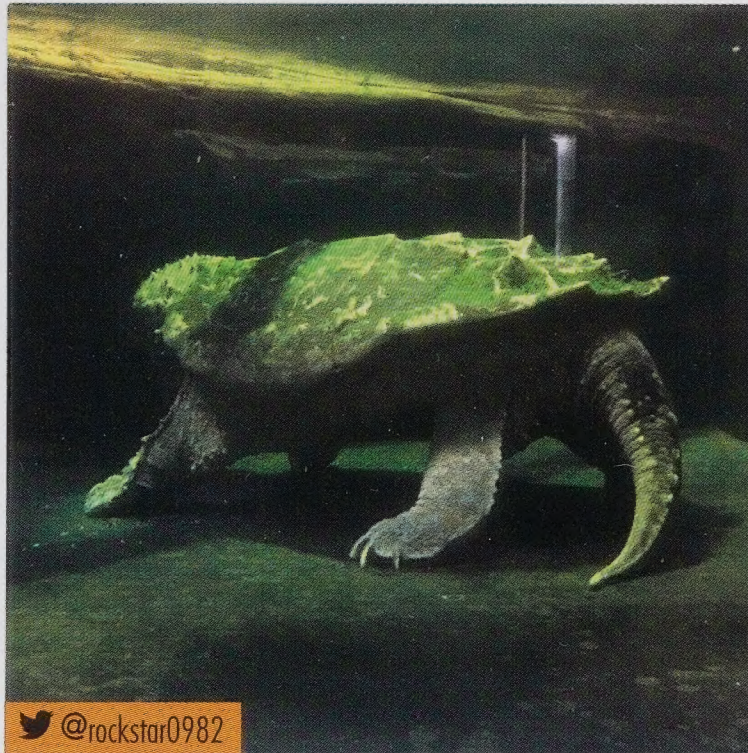
The magazine for members of **FONZ** | FRIENDS OF THE NATIONAL ZOO

FRIENDS OF THE NATIONAL ZOO SOCIAL CIRCLES

As this year comes to a close, take a look back on the adventures members had this year. Here's to a 2017 full of fun and happiness!



@PokemonGoApp @NianticLabs A wild Blastoise appeared! 🐉
#DCzoo #beast #pokemongo



Gotta catch Pokémon GO!

A hotspot for gamers, Pokémon GO species appeared among Washed Ashore sculptures, animal exhibits, and at events like Brew at the Zoo.



Fundraising with Conservation Nation



A wish for change.

From more giant pandas to more support for global conservation programs, members shared their love of animals the entire year—at the Zoo and even during the blizzard of 2016.

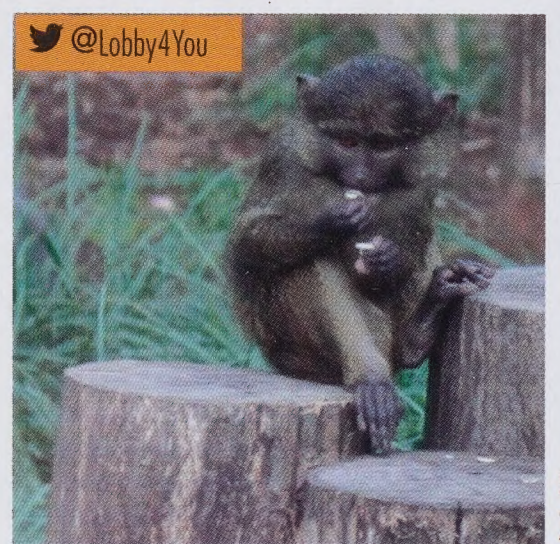
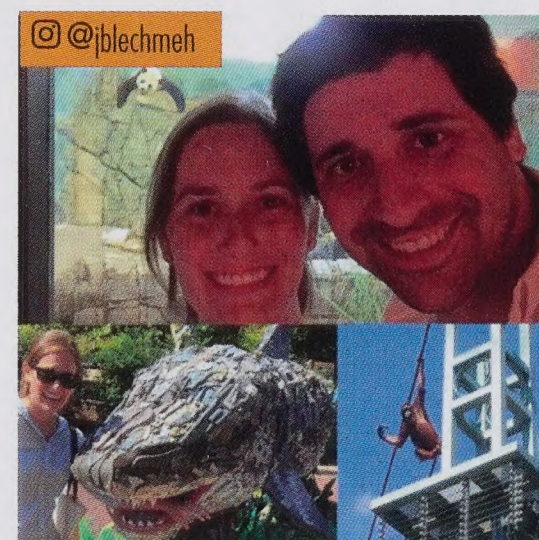


In Memory: Liam Lasher loved visiting the Zoo. On this day, he wanted his photo taken with the sculptures and he was thrilled when he found the chimps to imitate. ~Roni Lasher



TELL US!

Use **#WeAreFONZ**
and tell us **WHAT**
WOULD YOU MOST LIKE
TO GET OUT OF YOUR
FONZ MEMBERSHIP.



Baby Zawat

Always animals at the Zoo!

Dreams came true when guests were able to visit Bei Bei, take a spin on the carousel, and encounter... wild adventures with our animals.

Be part of the conversation! Join us on
@FONZNationalZoo or email us at WeAreFONZ@si.edu

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FEATURES

JESSIE COHEN/NZP

Animal Architects

Prairie dogs dig underground villages, beavers fell trees, mole-rats create intricate tunnel networks, and some apes make a new nest in the trees every night. Explore the amazing natural structures that animals build.

BY BRITTANY STEFF

20 Defusing Danger

BY PHYLLIS MCINTOSH

Safely providing medical care for animals in the Zoo's collection requires special procedures and training—along with the occasional strip of duct tape.



FONZ 2017 Wall Calendar

Enjoy 12 months of breathtaking images featuring your favorite Zoo animals—a special benefit of FONZ membership.



BARBARA STATAS/FONZ PHOTO CLUB

WINTER 2016-2017

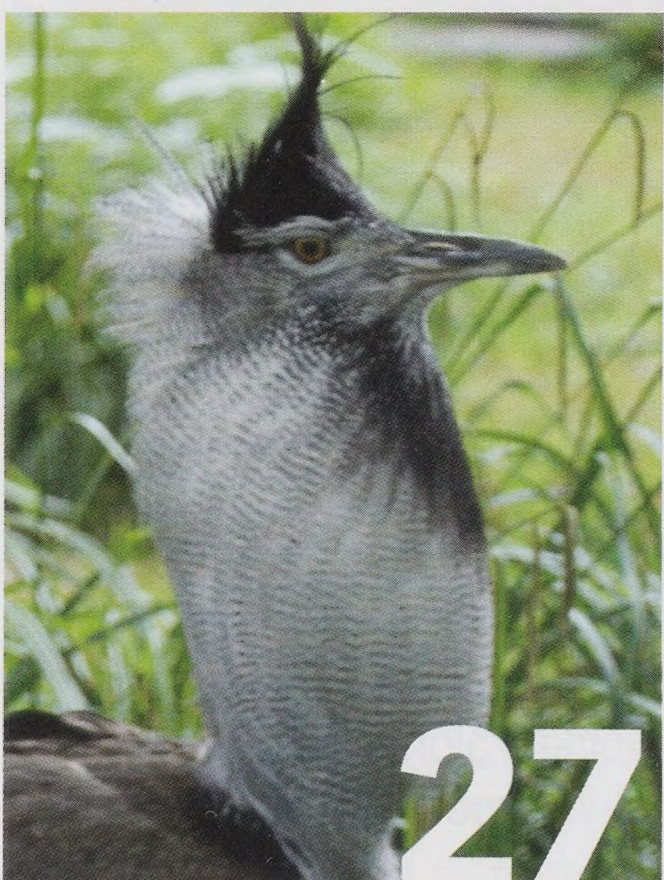
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"Rounding up for Conservation" in Zoo shops and restaurants funded \$100,000 in grants for animal care and conservation.

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Wild educational opportunities await kids at the Zoo.

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A lucky moment with an elusive animal turns an elusive dream into reality.

SMITHSONIAN Zoogoer



is the dedicated partner of the Smithsonian's National Zoological Park. FONZ provides exciting and enriching experiences to connect people with wildlife. Together with the Zoo, FONZ is building a society committed to restoring an endangered natural world. Formed in 1958, FONZ was one of the first conservation organizations in the nation's capital.

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Smithsonian National Zoological Park is located at 3001 Connecticut Ave., N.W., Washington, D.C., 20008-2537. Weather permitting, the Zoo is open every day except December 25. For hours and other information on visiting the Zoo, go to nationalzoo.si.edu.

Membership in FONZ supports the animal care, conservation, and educational work of the Smithsonian's National Zoo. It also offers many benefits: a *Smithsonian Zoogoer* subscription, discounts on shopping and events, discounted or free parking, and invitations to special programs and activities. To join, call 202.633.2922, or visit fonz.org/join.

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Premier	\$80
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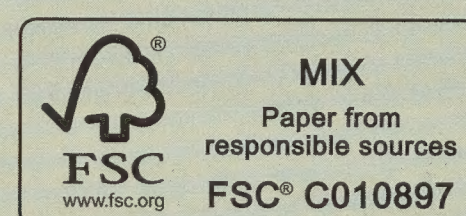
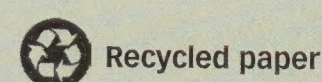
Email: Zoogoer@si.edu

On the cover: Asian small-clawed otters are among the most active of the Zoo's animal architects.

PHOTO BY MARK VAN BERGH/FONZ PHOTO CLUB

ASSOCIATION OF ZOOS & AQUARIUMS

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SMALL CHANGE, BIG POSSIBILITIES

“WOULD YOU LIKE TO ROUND UP FOR CONSERVATION?”

You’ve probably heard those words while buying things in the Zoo’s gift shops and restaurants. If you’ve “rounded up” and added your change to the bill, thank you so much. That change funds critical work by the incredible team of conservation scientists and animal care experts here at the Zoo, out at the Smithsonian Conservation Biology Institute in Front Royal, and around the globe. Thanks to your generosity, we awarded \$100,000 this year to Zoo and SCBI staff to fund 18 animal care and conservation projects.

On the “care” side, the Zoo’s dedicated team of animal care specialists want to make sure that the animals here at the Zoo are happy and healthy. The “Round Up for Conservation” grants helped fund, for example, analyses of hormones in everything from our beautiful Stanley cranes to our feisty Cuban crocodiles.

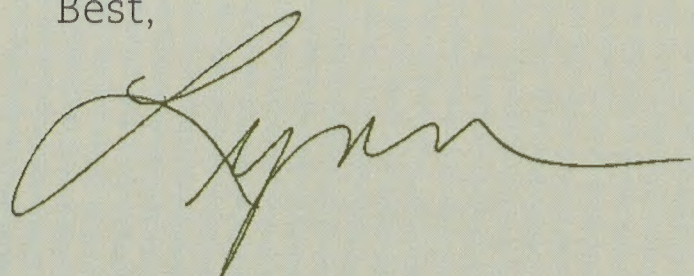
On the “conservation” front, several grants support Smithsonian science in habitats around the world. One researcher is using the grant money to create data tools for monitoring the reintroduction of scimitar-horned oryx, long extinct in the wild, into grasslands in Chad. Another scientist is surveying wild cheetahs in Kenya, thanks to your change. A third studies the distribution of both people and large mammals on Borneo to find optimal sites for agriculture without threatening a crucial wildlife refuge.

The Zoo and SCBI’s pioneering work in animal genetics also benefits from FONZ grants. One project is a genomic analysis of Hawaiian honeycreepers with the aim of breeding these endangered birds in human care. Another applies new techniques to studying the genes of Dama gazelles, the largest and most endangered of all gazelles. With fewer than 400 left in the wild, effectively managing the population in human care is essential.

A dime here, a quarter there—it may not sound like much. But the “Round Up for Conservation” grants prove the power of numbers—and the power of our members. Your generosity helps ensure that, together, we’re doing everything we can to help save species, here and in their habitats. And next year, we’d like to fund even more fantastic projects. So I invite you to check out the Zoo shops, find awesome holiday gifts, and round up for conservation.

Another small thing you can do to create big possibilities for animals is to check out Conservation Nation, a new website (fonz.org/give) where you can contribute directly to the conservation work of amazing Smithsonian scientists. Thanks to your generous donations (and lemonade stand revenue from some of your incredible kids), we’ve already been able to fund tracking collars for critically endangered Asian elephants in Myanmar and cameras in the forests surrounding Machu Picchu to help vulnerable Andean bears. You can also create your own fundraising page to help save animals. Just invite your family and friends to donate in lieu of buying you another pair of snowflake socks or a candy cane tie this holiday season. I hope you’ll join us in Conservation Nation.

Best,

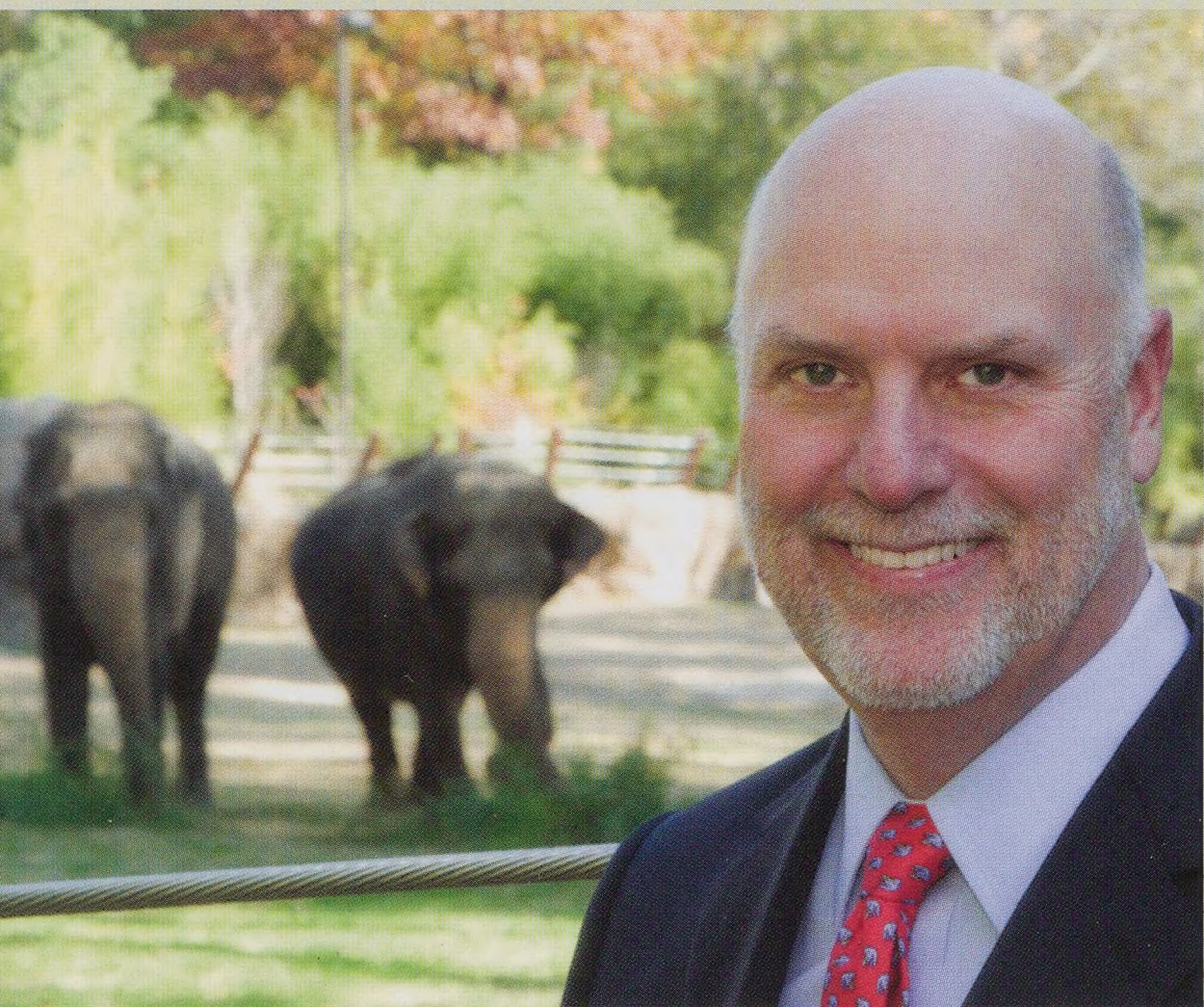


Lynn Mento
Executive Director, Friends of the National Zoo



COURTNEY SMITH/FONZ

A CONSERVATION MILESTONE



MEGHAN MURPHY/NZP

IN SEPTEMBER, GIANT PANDAS WERE UPGRADED FROM “ENDANGERED” TO “VULNERABLE.”

The latest count of populations in the wild climbed to just over 1,800. It was the best news for the species in decades, but truthfully, I’d like to see more progress. The International Union for the Conservation of Nature noted in its decision to take the giant panda off the endangered list that the effects of climate change on bamboo forests could undo much of the recent progress. The announcement is still a big step forward and a huge victory for everyone who has worked so hard on panda conservation over the past several decades.

That includes the world-class team of veterinarians, ecologists, reproductive specialists, and animal keepers at our National Zoo and SCBI. But it also includes researchers at the other U.S. zoos that house giant pandas: Zoo Atlanta, the San Diego Zoo, and the Memphis Zoo. And—critically—it includes

researchers and scientists in China. Saving these magnificent animals is truly a team effort.

Many of you have likely heard by now that Bao Bao, our three-year-old female panda, will leave us in late winter for her new home in China. Bao Bao is only the second surviving cub born to parents Tian Tian and Mei Xiang. In the three years since her birth, we’ve all grown extremely fond of Bao Bao. While the parting is bittersweet for us, her species needs her more than we do.

As part of the Zoo’s cooperative breeding agreement with the China Wildlife Conservation Association, all cubs born at the Zoo move to China by the time they turn four years old. As Bao Bao’s chapter at the Zoo closes, new chapters are beginning for the rest of our pandas. Bei Bei will remain here for another few years, but will soon live separately from his mother. We’ll continue to care for and study Tian Tian and Mei Xiang. They have been an important part of the giant panda conservation program for more than 16 years. There is still more we can learn about giant panda reproduction, and they are essential contributors to that work. We share what we learn from them with partners across the U.S. and in China.

The breeding season is coming; it’s typically in spring for giant pandas. As we have every spring since the Zoo began exhibiting giant pandas in 1972, we’ll be closely monitoring the animals, and ready to assist them as necessary. When Bao Bao goes to China to join their breeding program, that’s one more victory for conservation, and for giant pandas. I hope to see you around the David M. Rubenstein Family Giant Panda Habitat to celebrate this victory before she leaves.

Sincerely,

Dennis Kelly
Director, Smithsonian’s National Zoological Park

Winter Wonders at the Zoo

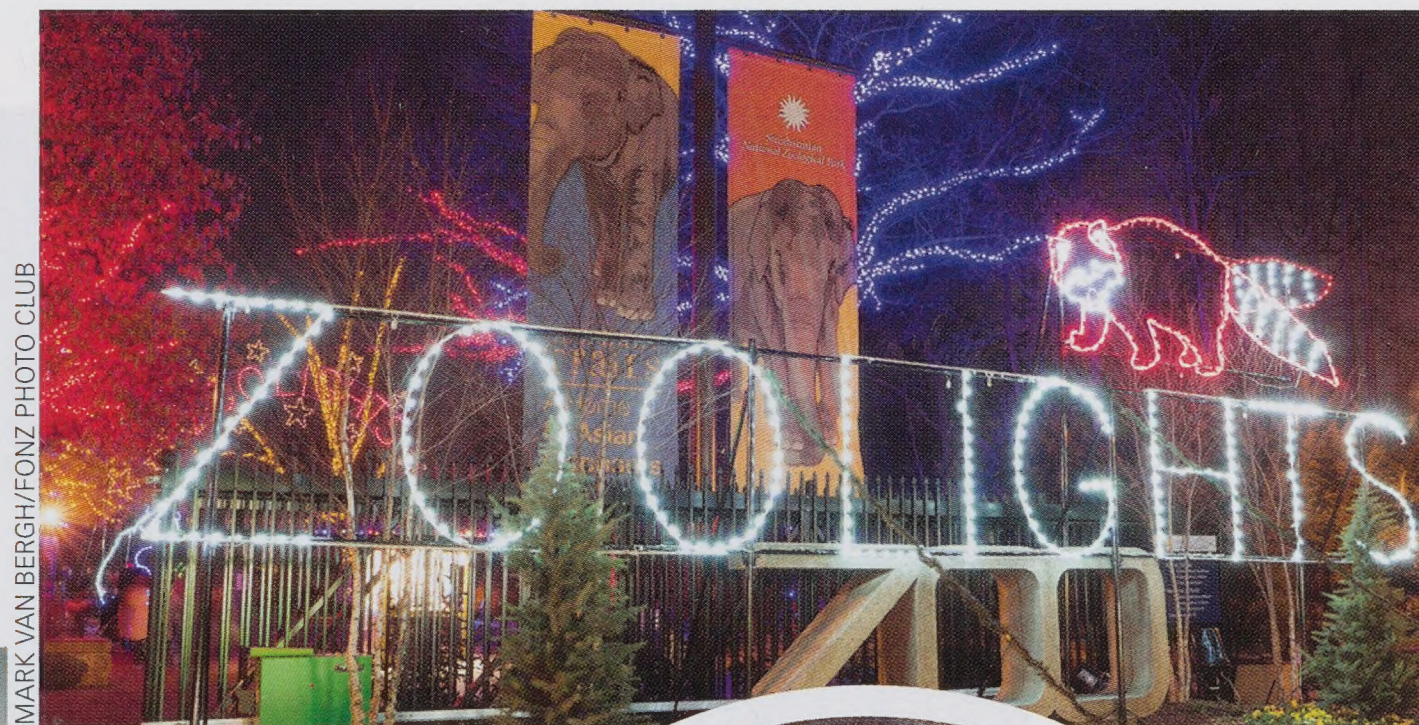
Chilly days
bring some hot
opportunities to
enjoy wildlife,
holiday fun,
and more.

MEET OUR NEW TIGER:

Sparky, a 12-year-old male Sumatran tiger who came to the Zoo from the Louisville Zoo, is now on exhibit at Great Cats. He's never sired cubs, and he's at the Zoo with a Species Survival Plan recommendation to—with luck—mate with Damai, a proven breeder and adept mother. fonz.org/sparky



BARBARA STATAS/FONZ PHOTO CLUB



MARK VAN BERGH/FONZ PHOTO CLUB

ZOOLIGHTS, POWERED BY PEPCO (Nov. 25 to Jan. 1): Glowing animal sculptures of more than 500,000 LED lights are the highlight of this annual holiday festival, along with nocturnal animal exhibits, a kids' train, snowless tubing, and winter treats. fonz.org/zoolights



ALEX REDDY, NZP

BATANG'S BABY: Redd, the first orangutan born at the Zoo in 25 years, is thriving, growing, and literally hanging out with Mom. Batang and Redd move at will between their off-exhibit nest and the public viewing spaces in the Great Ape House. fonz.org/redd

CATALINA MAKES A SPLASH:

The first sea lion born at the Zoo in 32 years is now on exhibit on American Trail. She was born this past summer to Calli (an 11-year-old female) and Jetty (an 8-year-old male). fonz.org/catalina



BARBARA STATAS/FONZ PHOTO CLUB



JIM JENKINS/FONZ PHOTO CLUB

A FEATHERED FAREWELL: Early in 2017, the Zoo's historic Bird House will close for a massive, multiyear renovation that will create Experience Migration—an unprecedented interactive exhibit showcasing the work of Smithsonian scientists. So drop by for an avian adieu to the birds you like best.



JESSIE COHEN/NZP

WILD GIFTS, SERENE SHOPPING: Save species and avoid crowds while finding fabulous presents for the nature lovers in your life. Zoo shops are open 10 a.m. to 4 p.m. every day of the week, with extended hours during ZooLights. And don't miss our new online store! fonz.org/giftguide



STAN BYSSHE/NZP

A TASTE OF THE TROPICS: Stroll through the rainforest, dive into coral research, encounter a rainbow of brilliant but imperiled frogs, and more—all at the Zoo's Amazonia exhibit, open 10 a.m. to 4 p.m. every day. fonz.org/amazonia

A Chill Approach to Conserving Coral

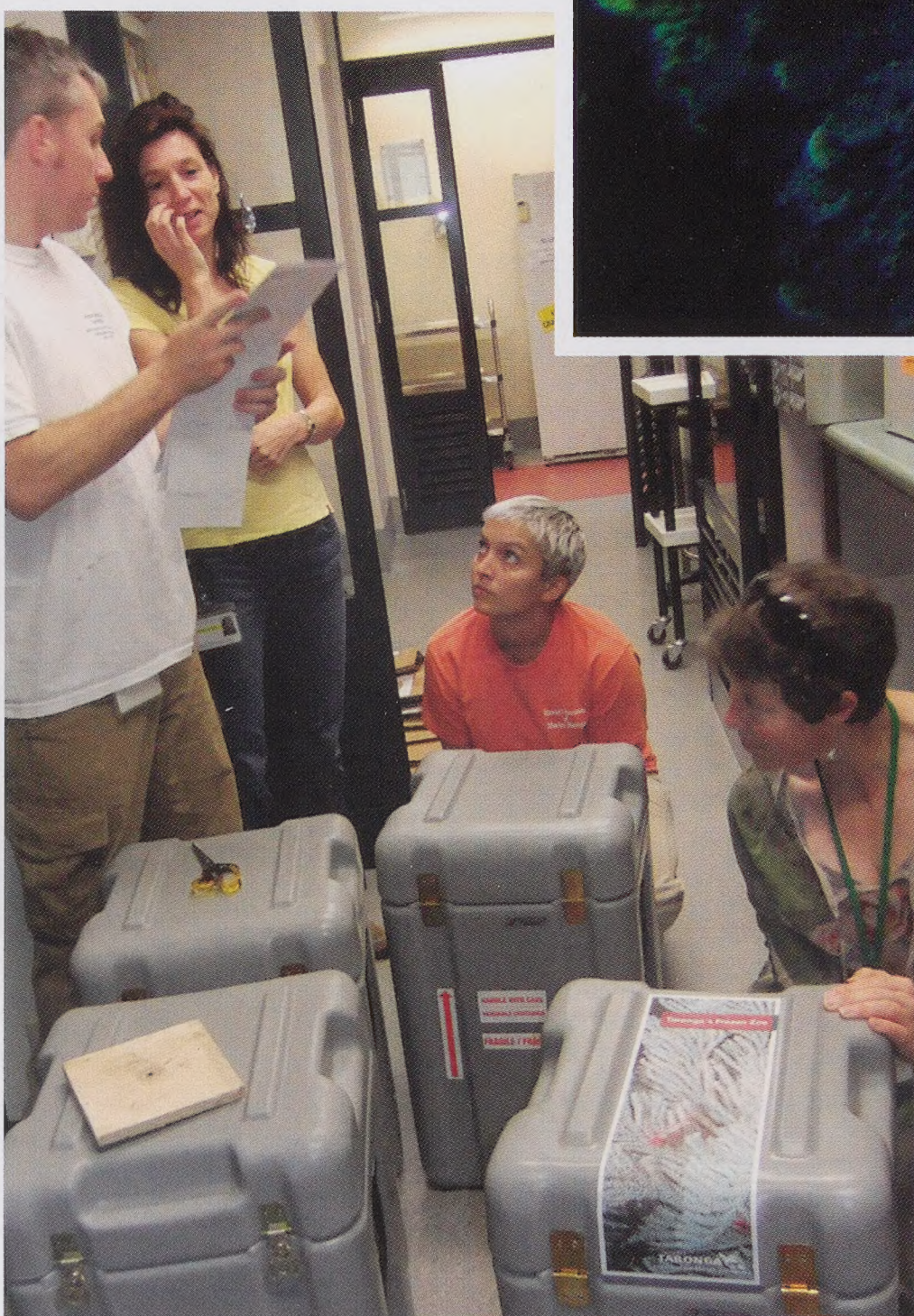
As Earth's oceans heat up, SCBI scientists are racing to save coral species around the world. Coral is a combination of several organisms in balance: the coral polyp itself, algae that live within the polyp, and bacteria that live on the surface of the coral. The algae generate food for the coral by converting sunlight into sugars, and they also give coral its rich colors.

Warmer water stresses the algae, causing the coral to expel it. Without algae to provide food, coral turns bone-white and begins to starve. Even polyps that don't starve can't reproduce.

SCBI scientists are freezing certain types of coral to create a bank of threatened species. Currently the team has about 12 species of coral in cryopreservation banks worldwide, and they hope to double that amount in the next year. The trick is timing the freezing process, which can only happen when the coral are reproducing. (The Great Barrier Reef can have 400 species of coral spawning in a single week.)

The team, led by SCBI scientist Mary Hagedorn, is focusing on species that are most endangered and most important in building reefs. Hagedorn says the task is tough but not impossible: "If we bank the sperm from 35 genetically distinct coral of a single species, we can save about 90 percent of that population's diversity!"

Learn more: fonz.org/frozen-coral



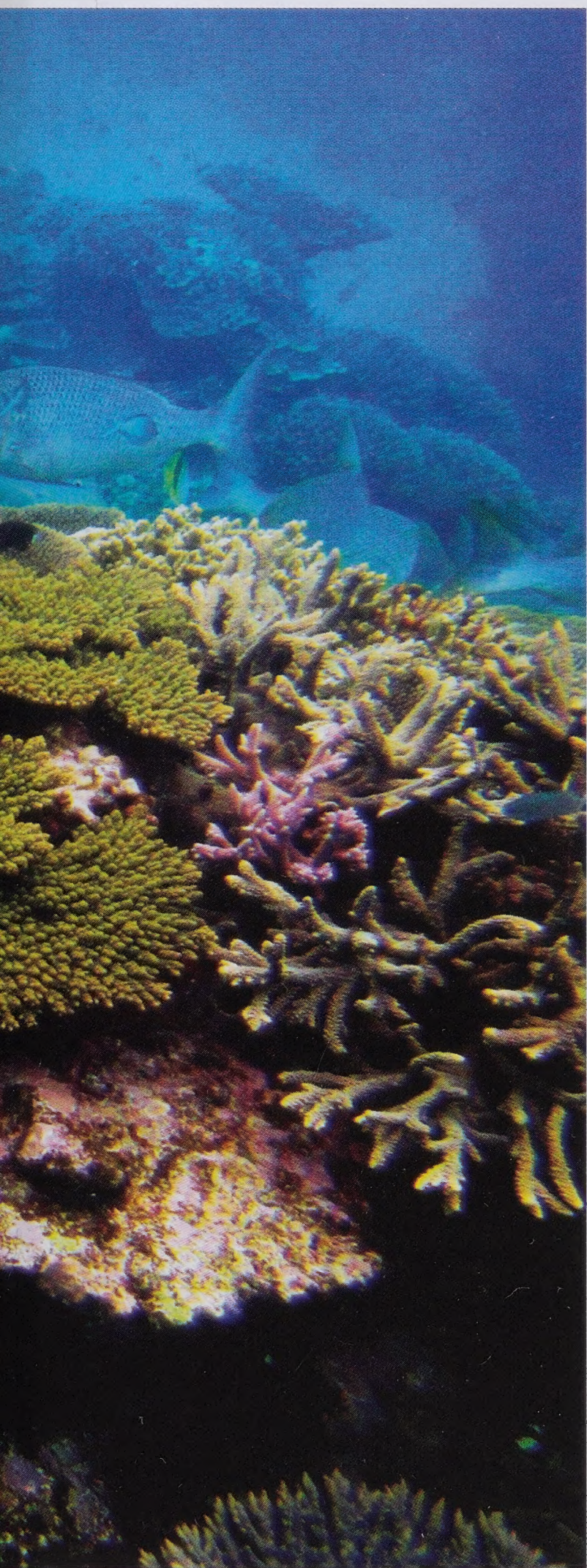
MIKE HENLEY/NZP

Andean Expertise

A team of Zoo and SCBI staff—Andean bear curator Craig Saffoe, chief veterinarian Don Neiffer, and scientist Francisco Dallmeier—recently traveled to Peru to collaborate with colleagues at the Inkaterra Association and other agencies. Inkaterra preserves species and habitats in Peru.

The group's projects include rehabilitating Andean bears rescued from poor conditions and releasing them into the wild. Classified as vulnerable to extinction, Andean bears are South America's only native bears.

The Zoo-SCBI team shared its experience in Andean bear husbandry, particularly the Zoo's renowned breeding successes. Billie Jean, a female on exhibit near Amazonia,



REBECCA SPINDLER/TARONGA ZOO

Helping Penguins Prosper

When a Peruvian natural gas company was building a new marine terminal back in 2007, it noticed two Humboldt penguins near the construction site. The company called in scientist Ximena Velez-Zuazo from SCBI's Center for Conservation and Sustainability to study the seabirds. Humboldt penguins are listed as a vulnerable species, and the utility wanted to ensure that the construction and operation of the terminal didn't affect them.

By the time the terminal was finished two years later, it was home to a growing penguin colony. There were 60 penguins in 2012 and 800 by mid-2016. The flightless birds live on the breakwater—a structure used to minimize the damaging effects of waves on the terminal. The breakwater is made of concrete bricks on one side and natural rock on the other, with lots of caves and crevices that are perfect hiding and nesting places for penguins and other seabirds.

The breakwater also provides a refuge for marine creatures underwater, including the krill, anchovies, and squid that Humboldt penguins eat. This is only the second time penguins have colonized a man-made structure. Researchers have studied the penguins' feeding and reproductive behavior, health, migration, and habitat use. And they're using this information to help other companies build wildlife-friendly structures.

Learn more: fonz.org/penguins



FERNANDO LEÓN LLANOS/MBMAP

has produced six cubs in six years. One observation the team made was that Inkatererra's adult bears may be spending too much time with one another; wild Andean bears generally come together only for mating.

The team also presented Inkatererra with a much-needed kit for darting animals to deliver anesthetics and medications. They trained Inkatererra staff on using the new equipment, which was generously provided by an anonymous donor.

Learn more: fonz.org/peru



FERNANDO LEÓN LLANOS/MBMAP



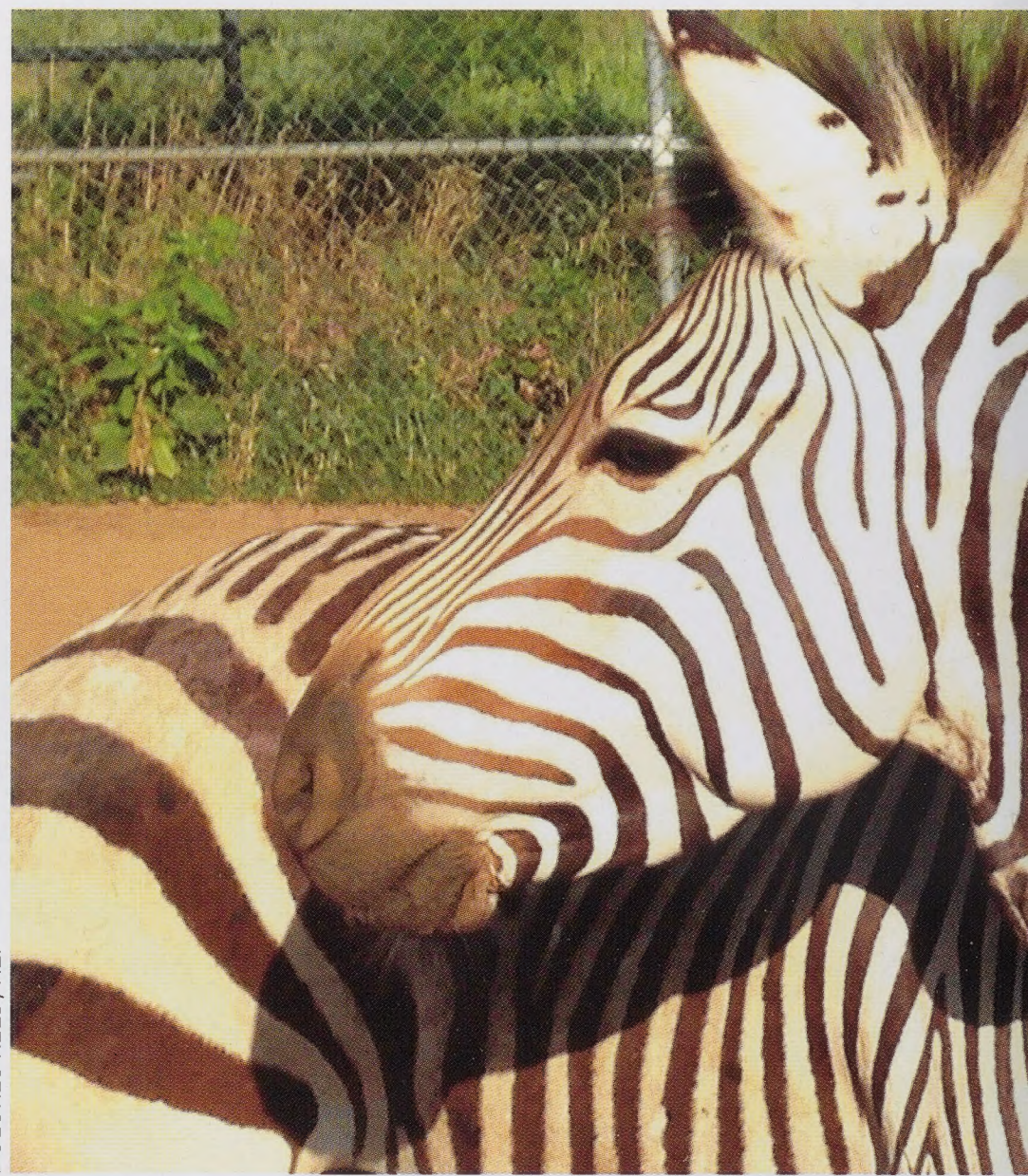
TOOTH CARE FOR BEARS

Brushing a bear's teeth doesn't sound easy, and it isn't. Yet it needs to be done. Fruit is a favorite menu item for the Zoo's sloth bears, and it sometimes leads to tartar. The bears also suck up termites—along with the occasional pebble, which can lead to chipped teeth.

To check and brush the bears' teeth, Asia Trail keepers have trained them to hold their mouths open against their enclosure. The keepers use a long toothbrush designed for dogs. No toothpaste, though, as the bears don't like the taste.

When the bears cooperate, they get a treat—grapes, coconut, nuts, peanut butter, or honey. This training enables keepers to better monitor the animals' health without anesthesia. Like all training at the Zoo, it's entirely voluntary, and the bears can walk away at any time.

Watch it happen: fonz.org/bear-teeth



DOLORES REED, NZP

New Zebras at Front Royal

SCBI is now home to three Hartmann's mountain zebras—two females (Yvonne and Xolani) and one male (Raylan). All three came from Disney's Animal Kingdom. Yvonne and Xolani are slated eventually to breed with Raylan, once he is sexually mature. Till then, he'll be housed separately.

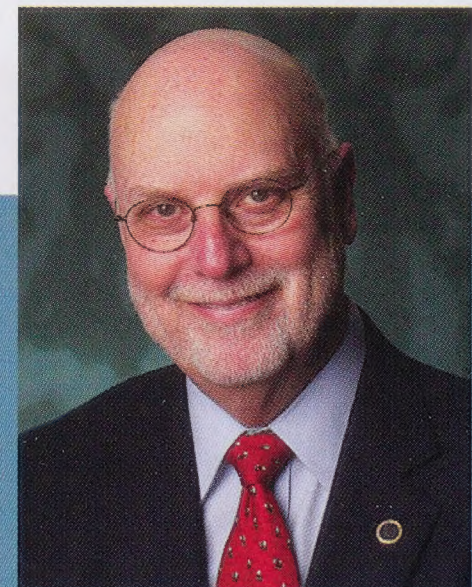
Hartmann's mountain zebras are native to mountain habitats in Namibia, and there are currently fewer than 25,000 in the wild, where they face threats from habitat loss and fragmentation as livestock production claims more land in their range.

Learn more: fonz.org/scbi-zebras

NATIONAL ZOO, NATIONAL LEADERSHIP

Zoo Director Dennis Kelly began a yearlong term as board chair of the Association of Zoos and Aquariums (AZA) this past September.

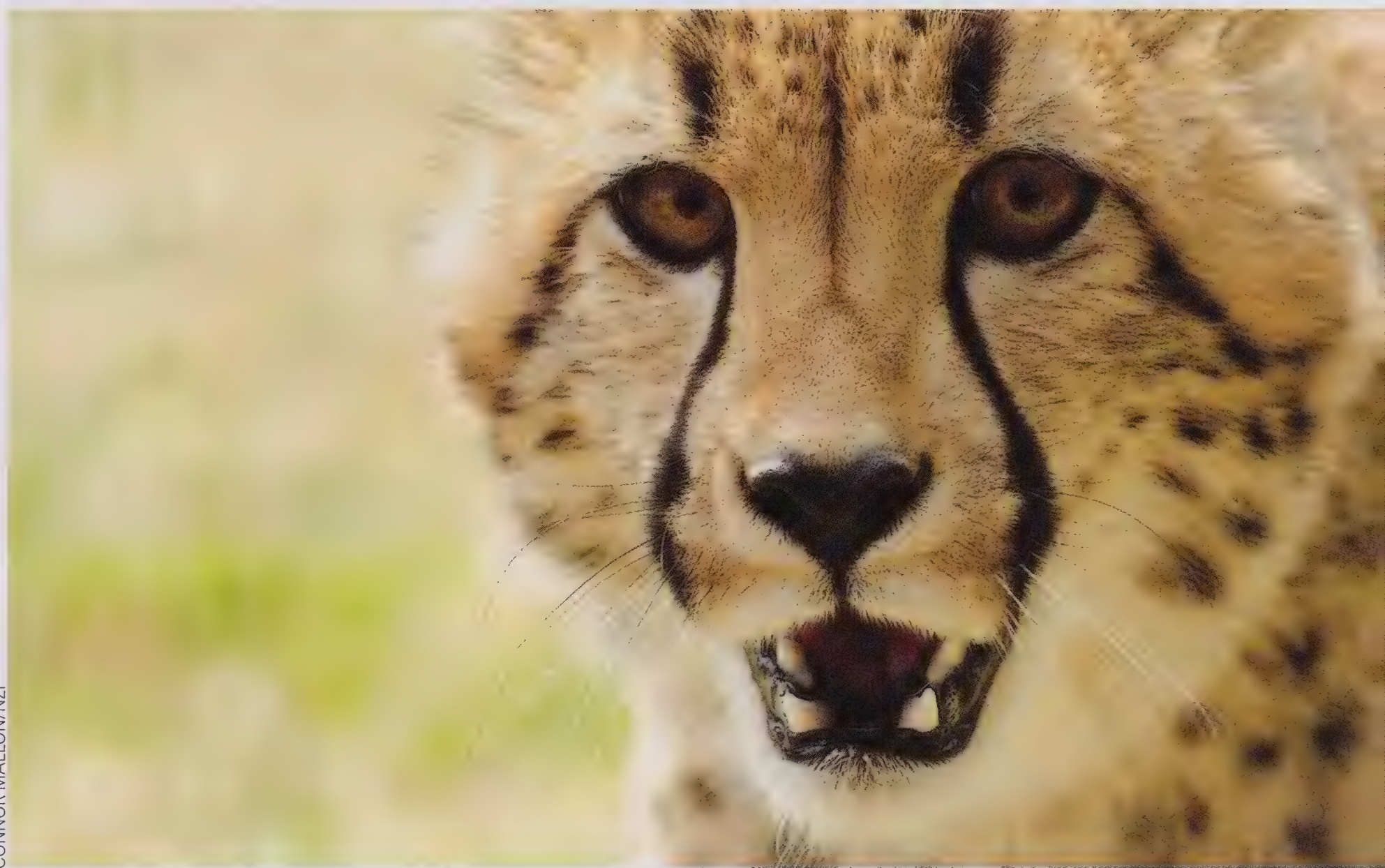
Speaking at the AZA conference in San Diego, Kelly identified two crises facing zoo professionals. The first is a crisis of relevancy amid growing popular discomfort with keeping animals in human care. The second is the wave of extinctions wiping out species around the globe.



SKIP BROWN/NZP



CONNOR MALLON/NZP



ADAM MASON, NZP

Elephantine Answers

SCBI's endocrine research lab recently analyzed hormones from elephants across North American zoos to learn how socialization and other factors affect reproduction. The result was a series of nine articles in the scientific journal *PLOS ONE*.

To combat those crises, Kelly challenged his AZA colleagues to do four things: (1) establish themselves as the world's leaders in animal welfare; (2) make institutions absolutely safe for animals, staff, and visitors; (3) take a more direct role in saving species in the wild; and (4) communicate more effectively about zoos' work, especially in wildlife conservation.

Read his speech: fonz.org/kelly-aza

Led by lab chief Janine Brown, the team found that elephants (which are highly social) are more likely to have normal reproductive cycles when living in groups. In addition, enrichment efforts such as food puzzles, timed feeders, and hidden snacks were closely tied to female reproductive health. "Making the elephants work for their food was good both physically and psychologically," Brown reports.

Learn more: fonz.org/ele-hormones


Zoos Boost Cheetahs' Genetic Health

Genetic diversity is a huge issue for cheetahs, since the entire species nearly went extinct 10,000 years ago and descended from just a few survivors. To assess the problem, SCBI scientists Adrienne Crosier and Kim Terrell and their collaborators examined DNA taken from blood samples collected from both wild and captive cheetahs during routine physicals over the past 30 years.

The researchers' key finding is that cheetahs in the wild are becoming less genetically diverse, which threatens the species' viability. As people encroach on their habitat, cheetahs are squeezed into smaller spaces, where they're more likely to inbreed. The good news is that cheetahs in zoos are as genetically diverse as they were 30 years ago, thanks to strong species management.

SCBI research has also helped identify the best ways to breed cheetahs in human care. For example, females that hit age six without having their first cub are more likely to develop fertility problems. Breeding younger females (ages four and five) is more likely to yield cubs and stave off such issues. The results of the study were published in the journal *Biological Conservation*.

Learn more: fonz.org/cheetah-study



From
dexterous
diggers to
egg-laying
engineers,
the animals of
the world—
and the Zoo—
build some
impressive,
complex
structures.

ANIMAL architect

BY BRITTANY STEFF



ects

W

andering through the Smithsonian's National Zoo, you'll encounter structure after structure: buildings, embankments, enclosures, and more. Each represents months, years, and sometimes decades of planning, re-planning, and execution. And each is the work of a single species—ours.

Widen your eyes a bit, and you'll see that other construction projects are under way as well. Their builders hold no engineering degrees, answer to no committee, abide by no building code, and are constrained by no budget. That's because these engineers are the animals themselves.

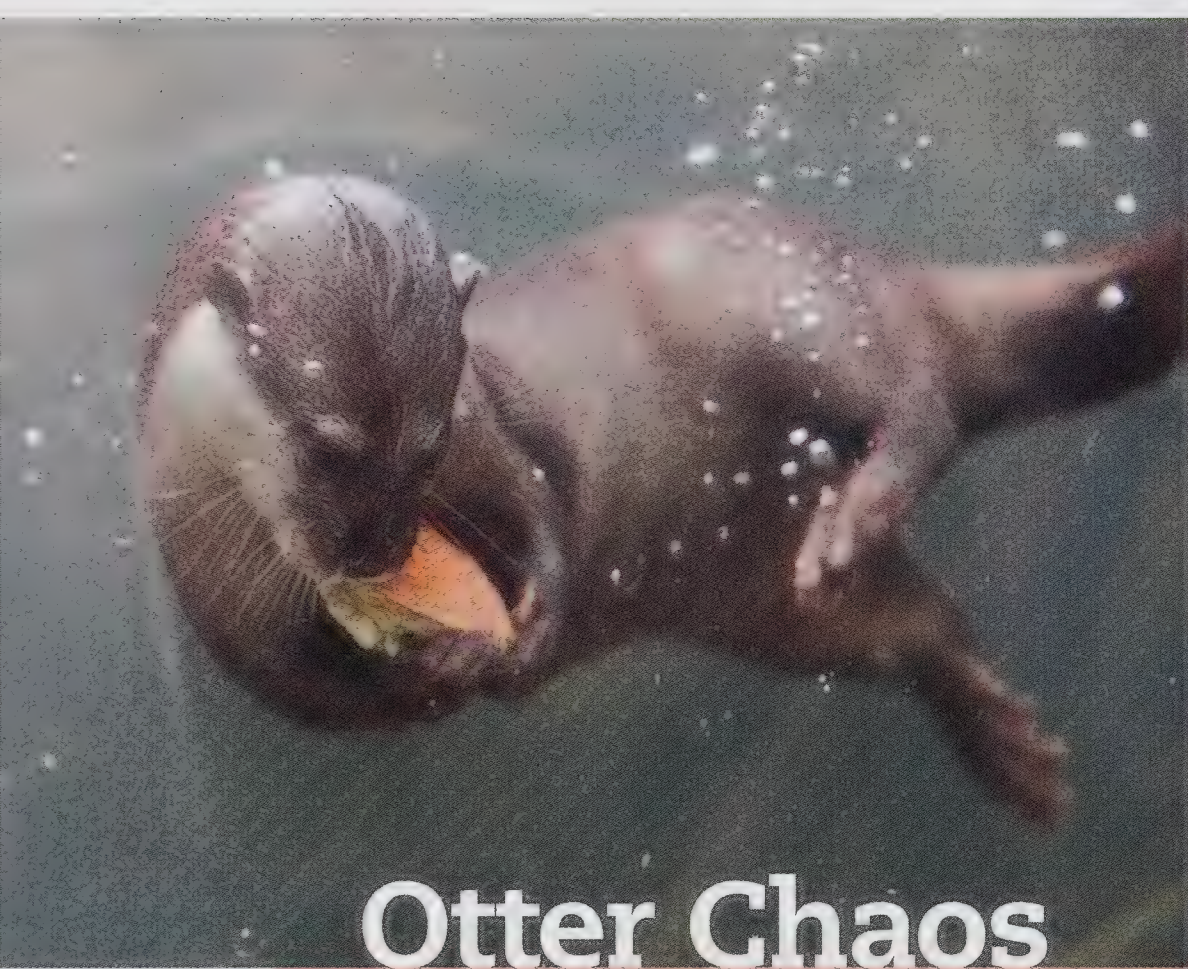
All animals modify their environment just by living in it, but some constructive creatures go well beyond that, fashioning nests, dens, burrows, and beds of striking complexity.

DIY: Rodent Style

One of the Zoo's most popular exhibits was also one of the easiest—for humans, anyway—to build. The project team created a giant concrete bowl and filled it with dirt. Then they added the actual construction crew—prairie dogs. The rodents did the rest, digging an underground village.

Years later, they're still at it. Prairie dog assistant curator Leigh Pitsko explains, "They're constantly renovating, making new holes, and fixing old ones that collapse. They're one of the most industrious animals at the Zoo. They're always building, and it's so fun to watch them."

In the wild, prairie dog towns can stretch for miles under the plains. Abandoned towns provide housing for black-footed ferrets, a



Otter Chaos

Among the Zoo's most eager animal engineers are the Asian small-clawed otters, whose zeal for home improvement can conflict with human priorities. That became clear the very first day the incredibly tactile otters settled into Asia Trail back in 2006.

The exhibits and horticulture departments had envisioned the otter yard as a lovely green space, full of plants. The occupants had other ideas. They immediately pulled up all the plants and built them into a nest in the back of their exhibit, totally ruining the aesthetic effect the humans were going for.

"Otters rearrange everything," says Asia Trail keeper Tallie Wiles. And they keep at it. These social otters frequently disagree on where everything in their exhibit ought to be, and they spend a great deal of time carrying things back and forth.

"With our current social group," Wiles explains, "Dad tends to make the nest, but it always moves. One otter will move it, another will move it back, and they'll have tugs-of-war to figure out where it should go."

"They're always carrying little things and jamming them into crevices, but sometimes it starts to look deliberate," says Wiles. "We'll go to shut a door and find it won't close all the way or it's stuck into place because they've lodged a pebble in the door track."

The otters' inclination toward mayhem makes keeping them safe and contained a full-time job. "It's a continually evolving strategy," Wiles says.

diverse range of reptiles and rodents, and even burrowing owls.

Another rodent at the Zoo is nearly as industrious, which posed a challenge for keepers at the Small Mammal House. In the wild, naked mole-rats live and burrow underground, making them difficult to observe. So the Zoo created a web of clear plastic tubes, allowing visitors to see the rodents as they scurry about.

Keepers supply the mole-rats with a range of materials that help them express their natural digging, tunneling, and reallocating instincts as they would in the wild. "Every day we go in and take out the majority of their pine shavings and put a uniform level of new pine shavings in their whole exhibit, to replicate how the soil would move in their subterranean habitat in Africa," explains assistant curator Kenton Kerns.

"They spend their day moving shavings around: putting more shavings into some chambers and out of others. Sometimes we'll even jam up their tunnels with food, so they have to move the food to get around, just as they would in the wild, where they eat tubers," Kerns says.

The mole-rat exhibit is just one example

of how striking a balance between animals' natural behavior and the need to ensure their visibility and the visitors' safety demands different approaches for each species. The same challenge arises with the world's most famous animal architects.

Busy Beavers

Beavers are consummate architects. They fell trees and build dams across waterways to create ponds, then erect their houses, or lodges, in the middle of the ponds. Beavers are much better at swimming than they are at running or climbing, so the water is the safest place for them to live and raise their young. Kits are born inside the lodge, then spend the next two or three years shadowing their parents and learning how to fell trees, gather supplies, and build dams and lodges.

"Beavers manipulate and change their environment more than any other animal," says American Trail assistant curator Rebecca Sturniolo. "Their whole life is maintaining their dam, and they're always adding to their lodge. The lodges can be so structurally sound that bears and other predators can walk on top of them and not be able to get through to the beavers inside."


The Zoo can't have beavers felling trees in their exhibit—the rodents are notoriously careless about adhering to blueprints or vision statements—so the beaver lodge is made of concrete. This also allows it to have some upgrades wild beavers don't have, such as heat and a ventilation system.

FACING PAGE: **Earth's most noted animal architects, beavers are largely aquatic but often come ashore to gather wood.**

BELOW LEFT: **Keepers fill the naked mole-rats' enclosure with wood shavings that mimic the dirt the rodents ceaselessly move in the wild.**

BELOW RIGHT: **The Zoo's prairie dogs largely built their own exhibit.**





**A beaver's
lodge can be
so structurally
sound that
bears and other
predators can
walk on top of it
and not be able
to get through
to the beavers
inside.**



The variety in size, style, and materials is almost as great as the diversity of birds themselves.

The Zoo fosters the animals' natural building instinct by giving them logs to chew, sometimes mounted upright in the ground to be felled first, and the beavers continue to add wood and logs to the top of the concrete dam and lodge.

Nesting: For the Birds?

Almost everyone has seen eggs in a nest perched in a tree, under an eave, or even in a wreath on the front door. Yet that canonical

nest, a woven bowl of twigs and sticks, is far from the only way birds build nests. The variety in size, style, and materials is almost as great as the diversity of birds themselves.

Take bald eagles. Their nests are among the largest in the bird world, measuring five to six feet across. Structurally not much different from the robins' nest in the bush on your front walk, it has to be much sturdier to stand up to the rigors of eagle chicks—and eagle parents.

Bald eagles weave sticks together to form the base, and then plug the cracks with dried vegetation. They line the bowl with lichen and feathers. Both parents work to build the nest, which may take up to three months to construct.

Other birds build nests of entirely different shapes. Baltimore orioles create elaborate hanging nests, the better to protect eggs and young from ambitious arboreal predators. The female oriole



JESSIE COHEN/NZP



GIL MEYERS/NZP



CONNOR MALLON

CLOCKWISE FROM LEFT: American eagles' nests can be six feet wide. Baltimore orioles weave elaborate purse-shaped nests. Ground hornbills use mud and feces to seal expectant mothers into a crevice or other safe place to lay eggs and protect chicks. Fathers deliver food through a small slit.

builds the nest alone, though her mate might occasionally help by bringing her nesting material.

The female weaves a pendulous, pear-shaped nest, using sticks for the outer supports and springy, flexible fibers to weave a little bag, then lining the whole structure with downy fibers and soft feathers. She doesn't deliberately tie knots as she pokes the fibers in and among the sticks with her beak, yet natu-

ral knots and tangles form, much as their unnatural equivalents bedevil headphone cords in a pocket.

Most hornbills, including those on exhibit at the Cheetah Conservation Station, create nests that give new meaning to "stay-at-home mom." During courtship, the male attracts the female with tasty snacks—and mud. She uses the mud, along with feces, to build a nest. Once dry, its walls are hard as cement.

When the nest is almost done, she hops in and seals up the entrance behind her, leaving only a little slit open. For two months, she's buried alive—first with her eggs, then with her chicks—while the male brings them food. It's a dramatic but effective way to keep the next generation safe from predators.

From the Birds to the Bears

Nesting is not just for the birds, of course. A variety of animals, not excluding humans, prepare for impending offspring by creating a special spot for them. Even some snakes, not typically viewed as a maternal bunch, build nests.

The king cobra, longest of all venomous snakes, twists her body to scoop vegetation into a mound in careful layers. The resulting nest lasts for several months as the eggs incubate. Heat produced by the decaying vegetation keeps them warm, and the leaves on top keep them dry and hidden.

Rotting vegetation is also a key nest ingredient for alligators. After creating a mound out of mud, the mother-to-be tops it with layers of foliage. Throughout the 65-day incubation period, in a reptilian form of climate control, she adds and subtracts vegetation to keep the nest and the eggs at a steady temperature.

Another nest-builder is almost as far from birds as animals come: bears. Most bears have their cubs curled up in a den, and some mama bears augment their dens with foliage. Since bears den in secret in the wild, scientists don't know a lot about their nesting behavior.

At the Zoo, however, staff have observed that both Billie Jean, an Andean bear, and Mei Xiang, a giant panda, move vegetation into their dens when they get close to giving birth. While Billie Jean mainly just scoops some of her hay into a comfortable heap, Mei Xiang seems to have elevated the nest to an art form.

Laurie Thompson, assistant curator on the giant panda team, explains that Mei Xiang builds a nest out of bamboo, but only during the breeding season. It's one of the ways the team knows to start monitoring her for a potential pregnancy.

"She brings the bamboo we leave out overnight for her to eat into her den. Even



Andean bears are the only members of the bear family that build nests in trees. They take branches and twine them together to make a sort of hammock—a cool place to rest during the day.

This behavior has not been extensively studied in the wild, but Billie Jean, the Zoo's adult female Andean bear, practices it in her enclosure.

For nighttime sleeping, however, she prefers her indoor den.

BEARS IN THE BRANCHES

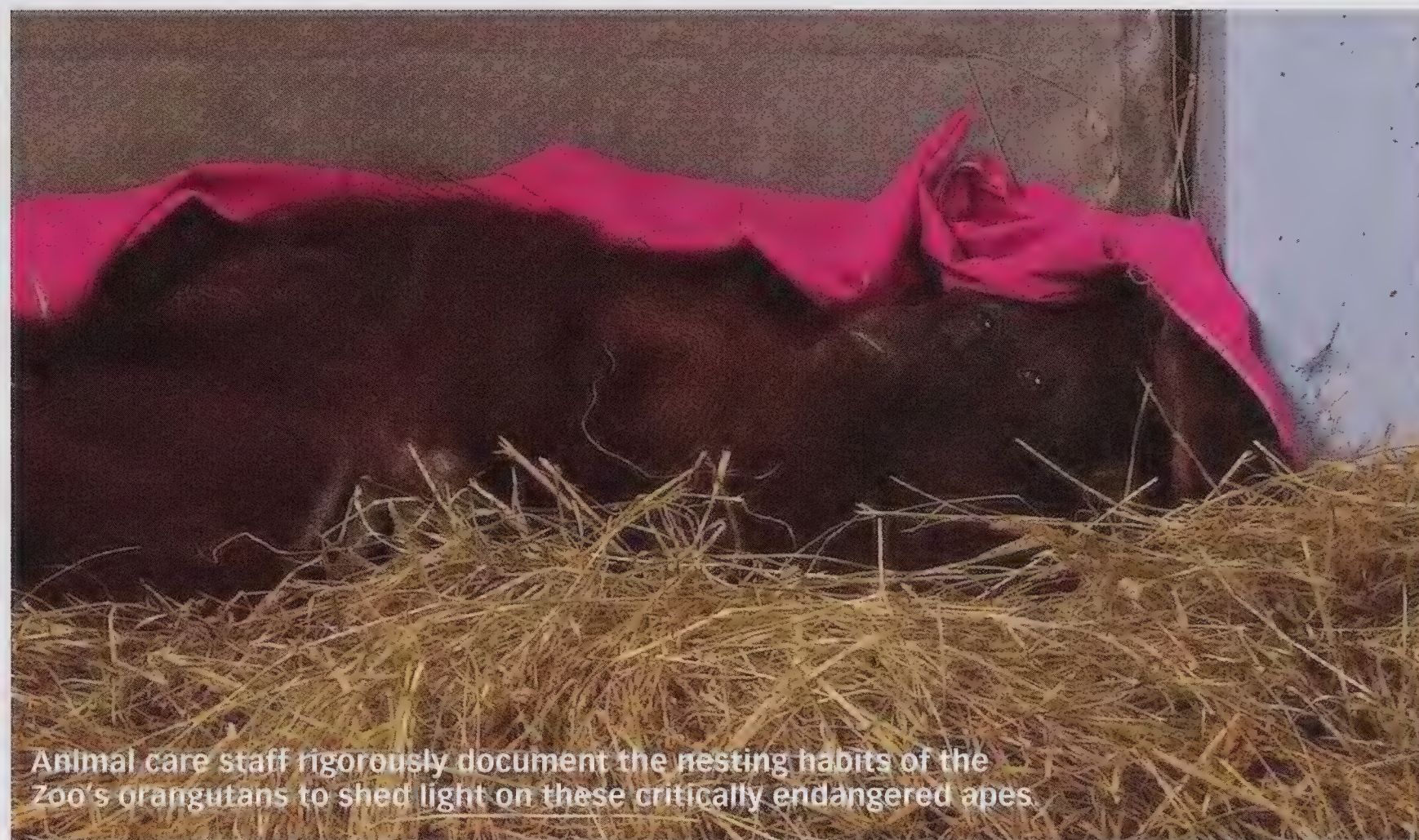
the really long pieces, she'll carefully maneuver all the way inside," Thompson says. "She shreds it, and ends up with quite a pile in there; it just builds and builds as she gets closer to giving birth. We let her make it the way she wants to. She gets to decide how big it is and add to it as she feels she needs to. We only remove pieces that are in the way of seeing if she's giving birth."

Making the Bed

Perhaps the most surprising nest-builders aren't birds or bears. They're fellow primates, including gorillas and orangutans. Gorillas and orangutans seem to be deliberate and strategic about their construction, creating "beds" or "platforms" to sleep and rest in at night and sometimes during the day.

Meredith Bastian, the Zoo's curator of primates, is a dedicated observer of ape nest-building. Before coming to the Zoo, she was a field researcher on Borneo, studying the cultural behavior of wild orangutans. Now she's taking that knowledge, applying it to orangutans at the Zoo, and hoping to expand scientists' knowledge of what orangutans build, and how.

In the wild, both gorillas and orangutans make nests to sleep in each night,



Animal care staff rigorously document the nesting habits of the Zoo's orangutans to shed light on these critically endangered apes.

MELBA BROWN/NZP

just as humans sleep in beds (though, admittedly, not all humans make their beds every day). Orangutan nests, Bastian explains, are astonishingly complex. They often include a mattress, pillow, blanket, and roof—all made out of leaves and other vegetation. In some locations, orangutans even seem to pick branches off trees with anti-mosquito properties and lay them by their beds.

At the Zoo, researchers have opportunities to record phenomena that may be rare or difficult to quantify in the wild. For example, National Zoo orangutans frequently share a bed. This is apparently rare in the wild, and seems to be rare at other zoos as well, according to Bastian's research.

Perhaps her most astonishing finding is that orangutans at zoos across North America all stop up their water sources with vegetation, and then sleep nearby. The reason? The vegetation slows the flow to a gentle gurgle—a source of soothing white noise, not unlike a sound machine.

It's tempting to label such ingenuity "almost human," but that's putting things backwards. As relative newcomers to the primate family tree, we who build houses, dams, and towns are simply the latest in a long line of animal architects. **SZ**

—Freelance writer BRITTANY STEFF is a contributor to the Zoo's website.

BELOW Before giving birth, giant panda Mei Xiang (right) gathers bamboo (left) in her den.



MEGHAN MURPHY/NZP



JESSIE COHEN/NZP



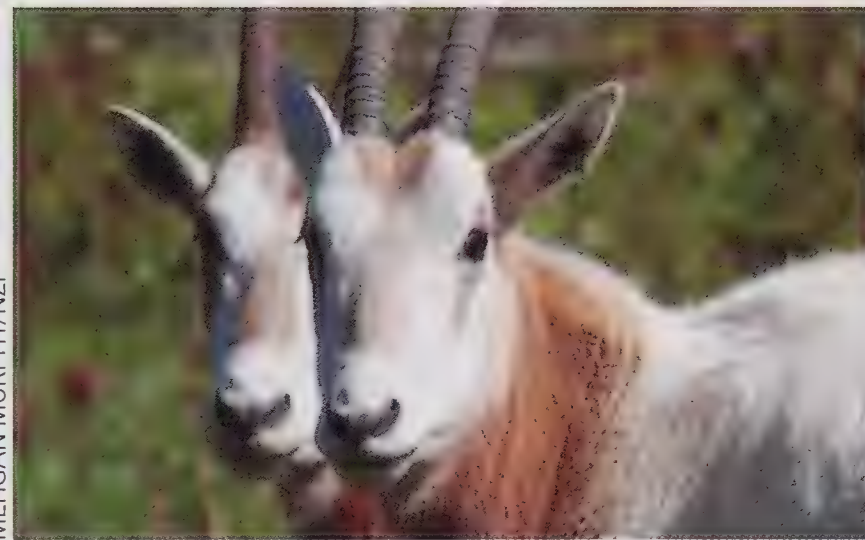
Smithsonian Campaign



JESSIE COHEN/NZP



MEHGAN MURPHY/NZP



MEHGAN MURPHY/NZP



CHRIS CROWE/NZP

Scholars Saving Species

As his first priority upon taking the helm in 2015, David Skorton launched the Smithsonian Secretary's Scholars program—a \$25 million initiative to fund 40 new curators, researchers, and scientists for five-year terms across the

Institution's museums, research centers, and Zoo. This constellation of talent will infuse new energy into the Smithsonian's work, accelerating the pace of discovery.

Seven of the 40 scholars will work at the Smithsonian's National Zoo and Conservation Biology Institute. Generous donors have already pledged funding for a working lands and seascapes ecologist, a population biologist, a veterinary epidemiologist/statistician, a

molecular pathogens scientist, and a research scientist for the Smithsonian One Health Program.

Two vital positions remain to be funded:

Movement of Life Ecologist: tracking the movement and distribution of species around the world.

Quantitative Conservation Ecologist: studying the population demography, behavior, and migrations of birds.

Funding a Secretary's Scholar for five years will cost \$625,000. Donors will have the option of having the position named in their honor.

We invite you to consider contributing to this crucial program. To learn more, please contact Lesli Creedon at 202-633-3022 or creedonl@si.edu. Your support can be the catalyst for tomorrow's great discoveries, turning our mission imperative—increasing and diffusing knowledge to save species—from a promise into a possibility.

DONATE ONLINE:
fonz.org/zoocampaign



MEHGAN MURPHY/NZP

Working Scientist, Working Landscapes

As the human footprint covers more of the globe, maintaining healthy, biodiverse landscapes is a growing challenge. To meet it, SCBI scientist Tom Akre has been named a Secretary's Scholar (funded anonymously) in his role as Working Land and Seascapes Ecologist. He will guide the development of new approaches to conserving biodiversity and ensuring that ecosystems continue to provide their many benefits to life on Earth.



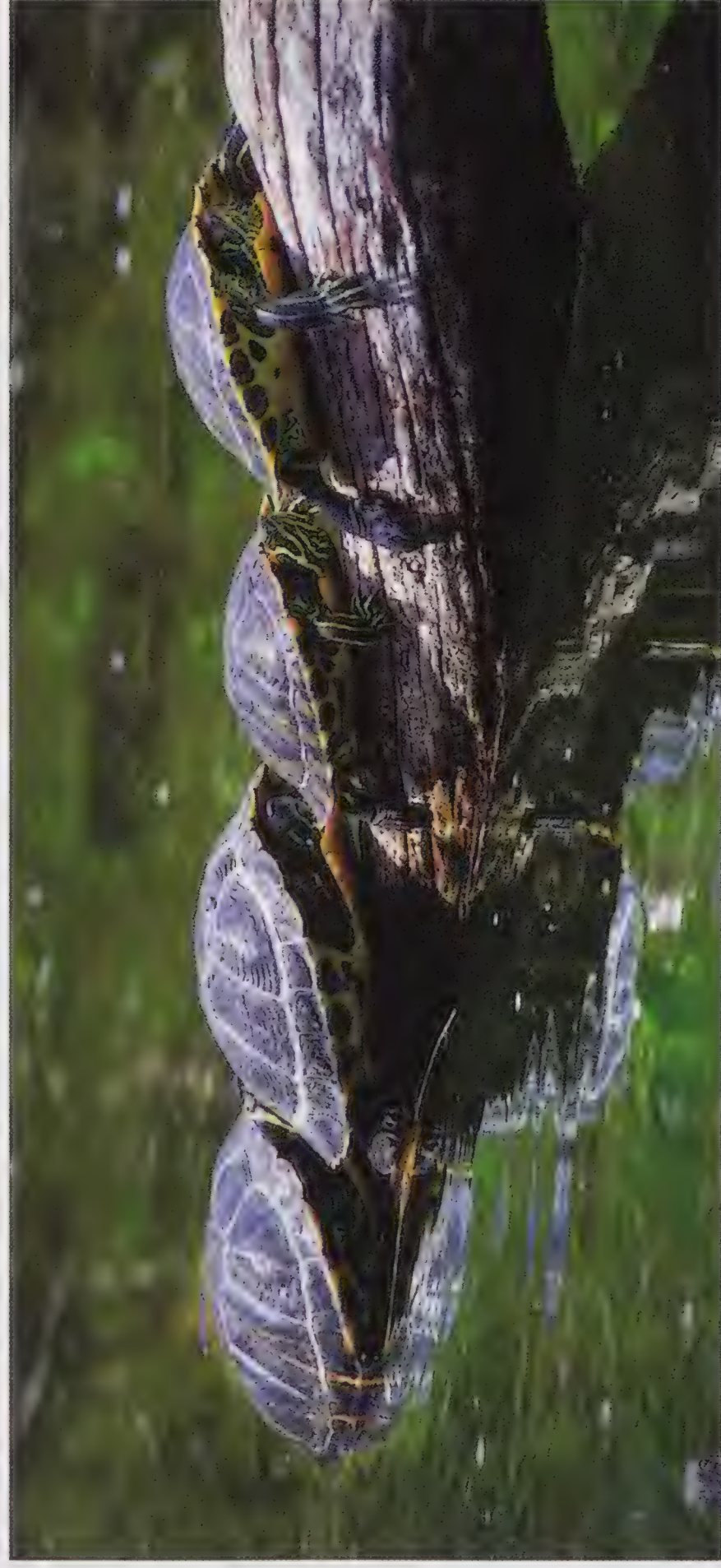
RICARDO STANOS, NZP



FONZ | FRIENDS OF THE NATIONAL ZOO

2017 calendar

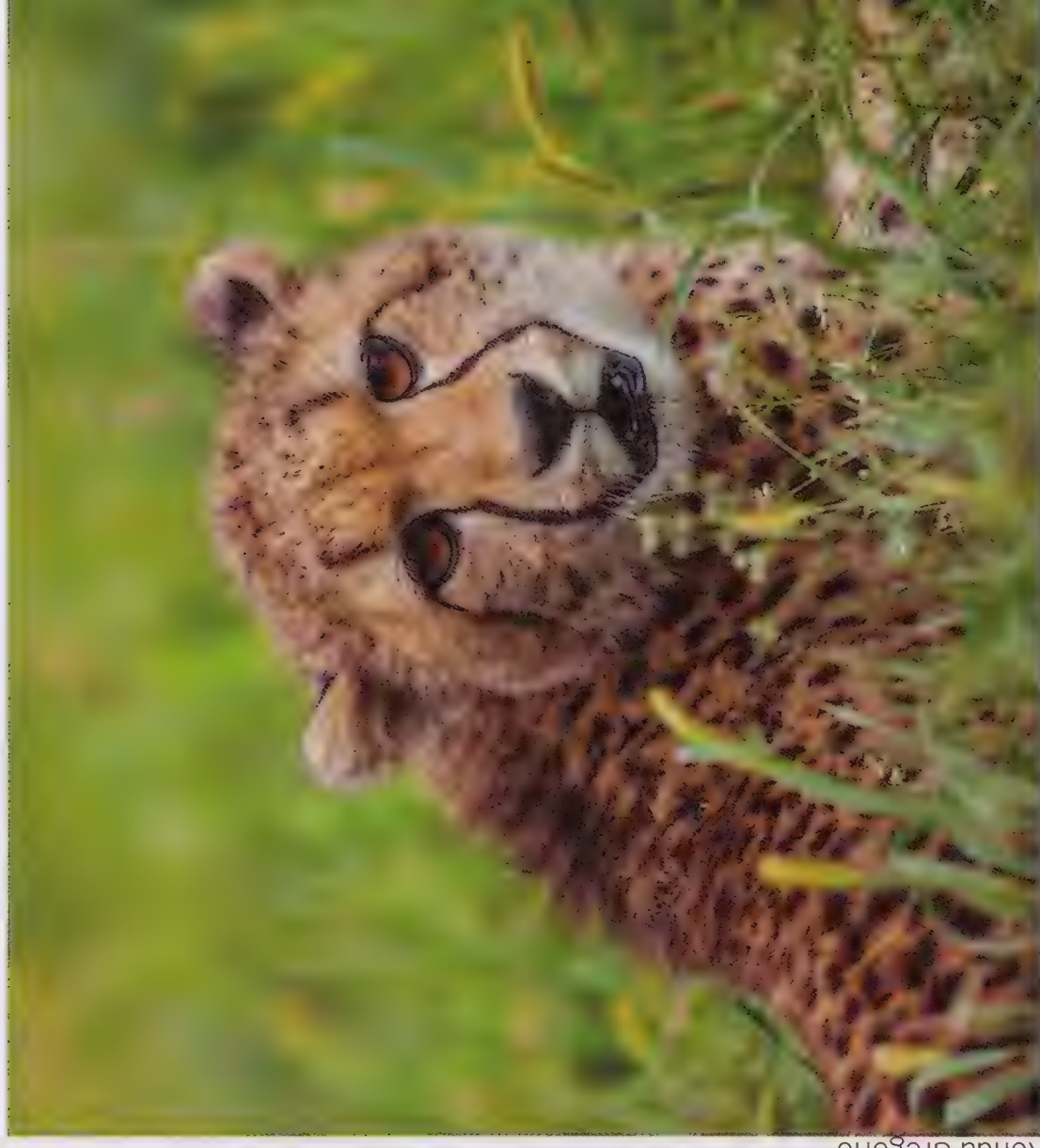
From giant pandas tumbling
in the snow to black-crowned
night herons summering in
the trees, the Smithsonian's
National Zoo is a place of wild
wonders all year-round.



Nina Dunn



Craig Salvas



Ronda Gregorio



Barbara Statas

a zoo for all seasons

Thank You for Being a Friend

Your FONZ membership helps the Smithsonian's National Zoo and Conservation Biology Institute save species—and around the globe. Thanks to you, FONZ provides essential support that helps the Zoo care for animals, conduct pioneering research, and undertake conservation projects all over the world.

FONZ also oversees gift shops and food concessions that provide revenue for the Zoo, and we produce popular special events that raise both funds and awareness. We create an array of educational opportunities, from kids' camps and classes to encounters between visitors and our devoted and highly trained volunteers.

We couldn't possibly do what we do without your support. Thank you.

To learn more about your *membership benefits and opportunities* to boost your involvement with FONZ and the Zoo, please see the notes throughout the calendar as well as the back cover. You can also visit fonz.org/benefits.

The 2017 Friends of the National Zoo wall calendar—a benefit of your membership—celebrates the astonishing range and beauty of the animals in the Zoo's collection. It's also a visual reminder that the Zoo is a great place to visit year-round. Not only is the park less crowded in colder months, but—as the pictures on the following pages make clear—the animals respond in varied and fascinating ways to the changes in their environment. And the Zoo's indoor exhibits offer not only shelter from the elements but opportunities to encounter creatures you might otherwise overlook.

Most of this year's pictures, as in prior calendars, reflect the artistry and generosity of the FONZ Photo Club. We thank these dedicated photographers for their contributions, and we appreciate their ability to portray the Zoo's animals in amazing new ways. In each season, there's always a lot to explore and enjoy at the Zoo. Come see us soon!

The FONZ Mission

Friends of the National Zoo helps the Smithsonian's National Zoo and Conservation Biology Institute save species by raising funds to support their mission, providing educational and fun experiences, and inspiring our members and guests.

Thank You



Many thanks to HBP, which generously sponsors this calendar and Smithsonian Zoogoer magazine.

January 2017



PANDA
PLAYTIME

PHOTO BY: Judy Young

Native to chilly mountains in China, **giant pandas** relish the snow like few other animals. During a major snowstorm in early 2016, a video of Tian Tian tumbling in two-foot snowdrifts went viral. Here, Bao Bao, the second surviving cub of Tian Tian and Mei Xiang, plays it cool. Giant pandas were recently upgraded from “endangered” to “vulnerable,” thanks in part to groundbreaking conservation work by scientists and researchers at the National Zoo and SCBI.

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december 2016

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february 2017

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NEW YEAR'S DAY						
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	MARTIN LUTHER KING, JR. DAY				INAUGURATION DAY	
15	16	17	18	19	20	21
22	23	24	25	26	27	28
		<div>Safari Day Camps and Nature Camp registration opens for Premier+ members. fonz.org/camps</div>				
29	30	31	<div>NOTES ON CAMP: Sign up your child for an unforgettable, award-winning educational opportunity at the National Zoo's Summer Safari Day Camp (fonz.org/safari2017) or the Smithsonian Conservation Biology Institute's Nature Camp (fonz.org/naturecamp2017). Priority registration starts January 31.</div>			



february 2017

BEARING
UP IN THE
COLD

PHOTO BY:
David Crooks

Native to the mountain ranges of South America, **Andean bears** are comfortable in the cold, thanks to their thick coats. The light, speckled markings on their snouts spread down to their chests and are unique to each animal, serving as a kind of fingerprint. In the wild, Andean bears spend much of their time in the trees, building platforms in the branches to help them reach food or even as nests to sleep.

The calendar for members of **FONZ** FRIENDS OF THE NATIONAL ZOO

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
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		Safari Day Camps and Nature Camp registration opens for all FONZ members. fonz.org/camps				
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		VALENTINE'S DAY				
12	13	14	15	16	17	18
	PRESIDENTS' DAY					
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January 2017

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march 2017

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MEMBERSHIP HAS ITS PRIVILEGES: By being a FONZ member, you support the groundbreaking wildlife conservation work at the National Zoo and SCBI. You also get benefits including free or discounted parking; exclusive animal tours and previews; and priority access to camps, classes, and events. fonz.org/membership



march 2017

UNEASY
BEING
GREEN

PHOTO BY:
Istvan Kerekes

Fiji crested iguanas are found only in the forests of some South Pacific islands, where they are critically endangered due to habitat loss. Some islands have as few as 80 iguanas left. When threatened, these reptiles have the ability to rapidly change color from green to black. If that doesn't scare away the potential attacker, an iguana will expand the dewlaps in its neck, bob its head, and lunge.

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february 2017

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april 2017

PLAN FOR A WILD NIGHT: Sign up for our popular Snore & Roar sleepovers, which let you camp out overnight at the Zoo. Fall asleep—if you can—to the howls of wolves and wake up to the calls of gibbons. fonz.org/snore

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		PLAN FOR A WILD NIGHT: Sign up for our popular Snore & Roar sleepovers, which let you camp out overnight at the Zoo. Fall asleep—if you can—to the howls of wolves and wake up to the calls of gibbons. fonz.org/snore	ASH WEDNESDAY	NATIONAL ZOO ESTABLISHED, 1889		
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april 2017



TRAVELERS IN THE TREES

PHOTO BY:
Sally Guardia

Black-crowned night herons have been familiar faces in the park for more than a century. The pattern is as predictable as the seasons. A few scouts arrive in late winter and settle into the same spot near the Bird House. They're followed by about 100 nesting pairs. Chicks hatch in the spring, and the flock spends the summer at the Zoo before heading south again in the fall.

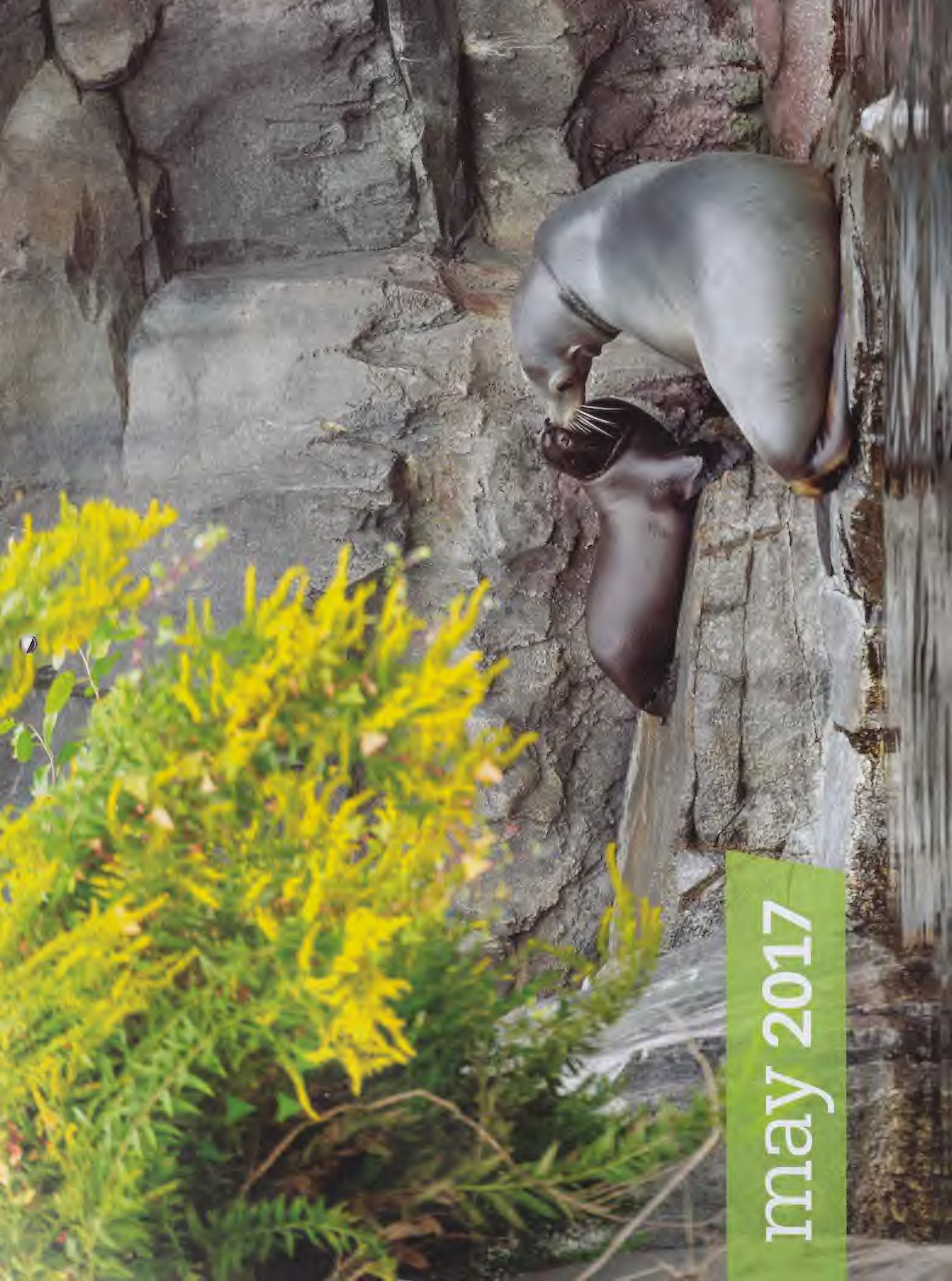
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march 2017

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may 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		EASTER MONDAY: One of the Zoo's longest-running traditions, Easter Monday has been celebrated every year since 1891. Families can enjoy an egg hunt, field games, animal demonstrations, and a visit from the Easter Panda! fonz.org/easter				APRIL FOOLS' DAY
		Snore & Roar and Scout Snooze registration opens for all FONZ members, fonz.org/overnights				
2	3	4	5	6	7	8
	FONZ FOUNDED, 1958 PASSOVER begins at sundown.					
9	10	11	12	13	14	15
EASTER SUNDAY	EASTER MONDAY					EARTH DAY
16	17	18	19	20	21	22
23						ARBOR DAY
30	24	25	26	27	28	29



may 2017

MOTHER
AND CHILD

PHOTO BY:
Barbara Stutas

In mid-2016, the Zoo celebrated a milestone when one of its **California sea lions**, Calli, gave birth to a female named Catalina. She was the first pup of her species born at the Zoo in 32 years. Like most California sea lions, Catalina is extremely social and gregarious, and she's a powerful swimmer. In the water, sea lions' front flippers can propel them at speeds of 25 to 30 miles an hour.

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april 2017

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June 2017

INTERNATIONAL MIGRATORY BIRD DAY						
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7	8	9	10	11	12	13
MOTHER'S DAY						
14	15	16	17	18	19	20
					RAMADAN begins at sundown.	
21	22	23	24	25	26	27
	MEMORIAL DAY					
28						
DINE FOR A CAUSE: More than 100 of the area's top restaurants and vintners will serve their finest creations al fresco, as part of ZooFari. It's the biggest culinary event in town! Best of all, proceeds help support the Zoo's mission to save species. fonz.org/zoofari						

juin 2017



SOUNDS OF SUMMER

PHOTO BY:
William O’Brien

American bullfrogs—like this beauty spotted on the pond outside the Reptile Discovery Center—provide the soundtrack to summer nights. Their steady croaking is loudest during the frogs’ mating season, as males announce themselves to females, ward off other males, and prepare to defend their turf. SCBI researchers are vigorously studying chytrid, a fungus that has been wiping out whole species of frogs and other amphibians. Fortunately, American bullfrogs have not been affected.

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May 2017

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July 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
ADOPT A SPECIES: For Father’s Day this year, treat Dad to a virtual adoption of one of the Zoo’s endangered species. Packages range from \$50 to \$1,000 and come with a variety of benefits. Best of all, you’ll be supporting the conservation work done by the Zoo and SCBI! fonz.org/adopt				1	2	3
				WORLD OCEANS DAY		
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FATHER’S DAY			SUMMER SOLSTICE			
18	19	20	21	22	23	24
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july 2017



AMERICAN
ICON

PHOTO BY:
William Bitman

Bald eagles are a conservation success story. The U.S. was once home to as many as 75,000 of the birds, but by the early 1960s, the population had dropped to just 417 breeding pairs. Thanks to tireless conservation efforts—and protections under the Endangered Species Act—the birds have recovered strongly. Populations are now stable throughout most of the U.S. The Zoo is home to two bald eagles: Tioga (a male) and Annie (a female). Both were rescued after injuries left them unable to fly.

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June 2017

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August 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
DRINK BEER, SAVE WILDLIFE: Brew at the Zoo offers beer from more than 70 craft breweries, along with animal encounters, tastings from top restaurants, and other entertainment. fonz.org/brew						
2	3	4	5	6	7	8
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16	17	18	19	20	21	22
23	24	INDEPENDENCE DAY				INTERNATIONAL TIGER DAY
30	31	25	26	27	28	29

august 2017



ONE COOL CAT

PHOTO BY:
Barbara Statas

Sumatran tigers are critically endangered, with fewer than 400 left in their native habitat of Indonesia. The Species Survival Plan for tigers includes breeding recommendations to increase the population while also maintaining genetic diversity. One such recommendation brought this male, Sparky, to the Zoo in mid-2016. Sparky has never sired cubs, but the animal care team hopes to breed him with Damai, who raised two cubs several years ago. Sumatran tigers are strong swimmers that take readily to water to pursue prey or cool off.

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July 2017

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September 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
RED, WHITE, AND YOU: Join us at Grapes with the Apes to raise a glass filled with the creations of renowned wineries and toast primate conservation. fonz.org/grapes		1	2	3	4	5
						WORLD ELEPHANT DAY
6	7	8	9	10	11	12
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27	28	29	30	31		



september 2017

TOP STUDENT

PHOTO BY:

Craig Salvendy

Kibibi, a **western lowland gorilla**, was born at the Zoo in January 2009. The youngest of the Great Ape House's six gorillas, she's extraordinarily smart, consistently outperforming her elders on the tests and puzzles that form part of the Zoo's cognition-research program. Western lowland gorillas are critically endangered in their Congo Basin habitat.

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August 2017

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October 2017

<div>CONSERVATION NATION: Want to save species? Now you can do it your own way, on your own schedule. Just visit the Conservation Nation website to set up your personal fundraising page. You can invite friends and family to sponsor you in a personal challenge: running for rhinos, swimming for sharks, eating for elephants, or whatever takes your fancy. Or you can request species-saving donations in lieu of gifts for holidays and special events. fonz.org/give</div>																																																																																			
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October 2017



AUTUMNAL
INTERLUDE

PHOTO BY:
Angela Napili

This solitary moment belies the fact that **African lions** are the most social felines. In the wild, they live in prides of 10–20 animals, including females, cubs, and one or two adult males. Females usually stay with their mothers' prides for life. Young males are pushed out when they reach maturity. Currently, lions are classified as vulnerable. About 20,000 remain in the wild, but most are concentrated into scattered habitats in Africa. And the past decade has seen the global population decline by about 30 percent. Lions' primary threats are habitat loss and hunting.

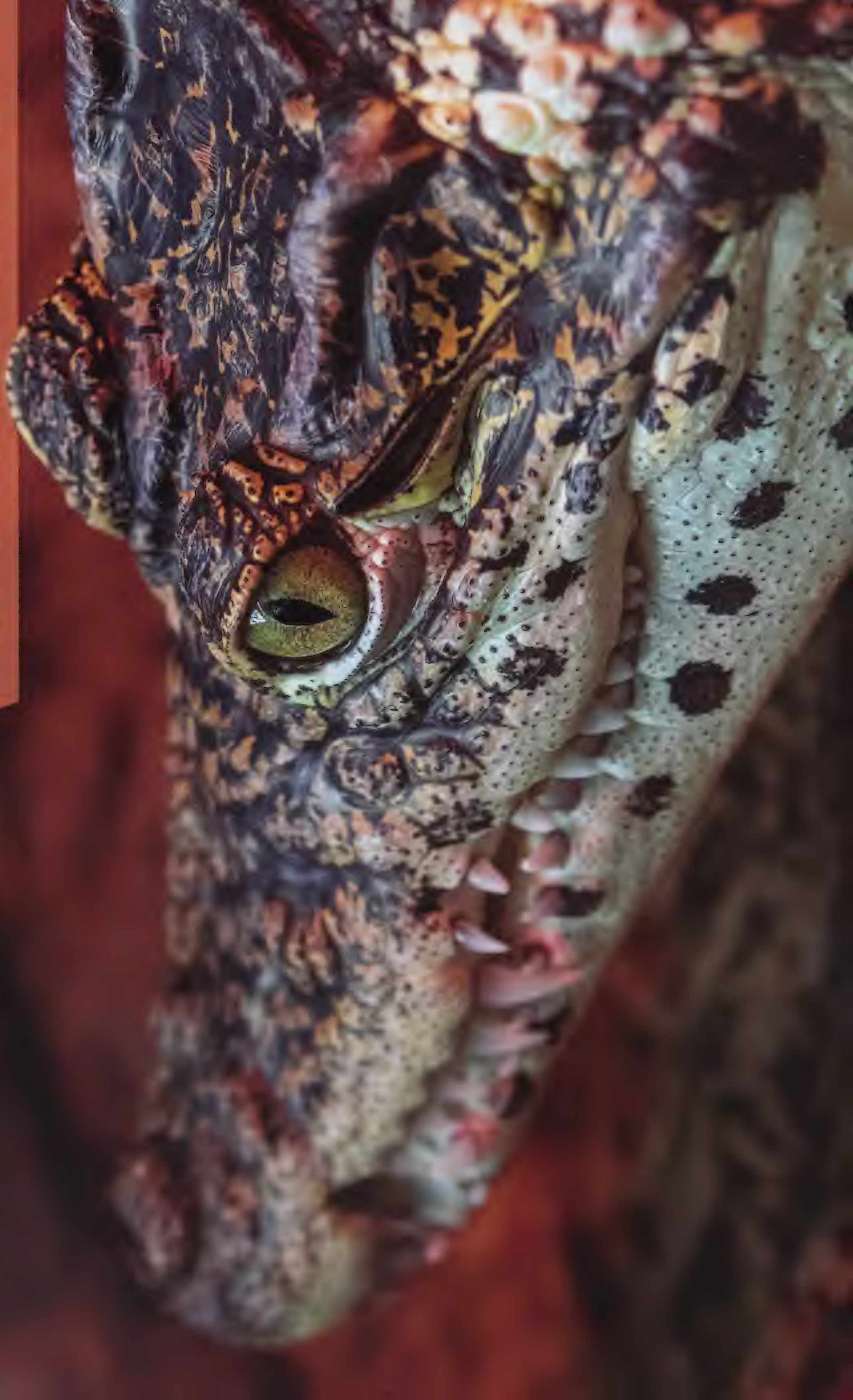
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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
ZOO WINTER HOURS BEGIN fonz.org/hours						
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	COLUMBUS DAY					
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22	23	24	25	26	27	28
		HALLOWEEN 2018 Birthday Parties and Winter Camp registration opens for Premier+ members. fonz.org/birthday fonz.org/camps Upgrade your membership at fonz.org/join to be eligible.				
29	30	31				

BOO AT THE ZOO: Bring your superheroes, princesses, zombies, and all other young creatures to the Zoo for this popular event. Walking the spookily decorated trails, you'll find more than 40 treat stations, animal demonstrations, and keeper talks. fonz.org/boo

november 2017



SMALL
CROCS, BIG
APPETITES

PHOTO BY:
Donna Headlee

Cuban crocodiles are smaller than their American cousins—typically less than 10 feet—and they are critically endangered. Found in just two regions of Cuba, where only about 3,000 still live in the wild, they have the smallest range of any crocodile. Despite their “small” size, Cuban crocodiles feast as vigorously as a Thanksgiving guest. They not only eat fish and invertebrates, but are powerful swimmers that can leap out of the water and snatch birds from branches.

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October 2017

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December 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
HOLIDAY DELIGHTS: ZooLights, powered by Pepco, is a winter wonderland in which the park comes alive each night. Enjoy live music, tasty treats, a snow-free slide, and more as you take in the stunning light displays comprising half a million eco-friendly LED bulbs. fonz.org/zoolights			1	2	3	4
DAYLIGHT SAVING TIME ENDS		ELECTION DAY 2018 Birthday Parties and Winter Camp registration opens for all FONZ members. fonz.org/birthday fonz.org/camps				VETERANS DAY
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december 2017



GENERATIONS
TO COME

PHOTO BY:
Jim and Pam Jenkins

Flightless, nocturnal birds native to New Zealand, **North Island brown kiwis** are about the size of chickens. Yet their eggs are much larger, weighing as much as a pound and making up 15 percent of the mother's body weight. Hatchings outside New Zealand are extremely rare. The first took place at the National Zoo in 1975. By late 2016, the Zoo and SCBI had hatched ten kiwis. Kiwi breeding efforts continue at SCBI while the Zoo's Bird House is renovated.

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november 2017

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january 2018

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
WILD GIFT OPTIONS: Both in person and online, you'll find that Zoo shops offer striking and unique gifts to delight wildlife lovers of all ages. fonz.org/shop Or set up a personal donation page at Conservation Nation and save species this holiday season. fonz.org/give						
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				WINTER SOLSTICE		
17	18	19	20	21	22	23
CHRISTMAS EVE	CHRISTMAS DAY Zoo closed					
24						
NEW YEAR'S EVE						
31	25	26	27	28	29	30

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Nina Dunn

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EDITOR: Peter Winkler
WRITER: Jeff Garigliano
COVER PHOTO: Jim and Pam Jenkins
DESIGN: 2farthings:design



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IT'S ELECTRIC

Prepare to be **AMAZED** as we build a new **SHOCKING** exhibit for electric eels in the Amazonia Science Gallery. Visitors of all ages will **BE ASTOUNDED** as they **BEHOLD** the electrifying lab featuring jaw-dropping demonstrations of these **STUNNING** Amazonian fish. But we need a **JOLT** from our members! Please consider a contribution today at fonz.org/eel2016. **We need your help to reach \$100,000 to build this STRIKING new exhibit. DONATE TODAY!**

Defusing DANGER



MATT EVANS/NZP

How do you anesthetize a crocodile?
Draw blood from a gorilla?
Do an ultrasound on a giant panda?
Carefully. **VERY** carefully.

BY PHYLLIS MCINTOSH

Like their namesakes on TV's *Golden Girls*, Cuban crocodiles Dorothy and Blanche shared a home and bickered about it. After years of cohabitation at the Smithsonian's National Zoo, bickering turned to battle. Keepers came in one morning to discover that Blanche had chomped into Dorothy's jaw, leaving a hole the size of a golf ball.

Although crocodiles heal remarkably well, veterinarians and keepers were concerned that the bite might have penetrated Dorothy's nasal passage, which could allow water to enter her lungs and cause pneumonia. A trip to the Zoo's hospital was unavoidable.

Moving Dorothy—eight feet long and 165 pounds—would be no small task. Cuban crocs

can run fast on land and leap out of water to catch prey. In the wild, they fight so fiercely that they tear off limbs and rip apart snouts. Add a less-than-sunny disposition, and Dorothy clearly was a patient to be reckoned with.

For Zoo staff, providing medical treatment—and routine daily care—for such dangerous creatures requires considerable skill, constant animal



MATT EVANS/NZP

training, and sometimes nerves of steel. Duct tape helps too.

Is That Animal Asleep?

One of the greatest challenges for Zoo veterinarians is finding the optimal dose of anesthesia that allows them to work safely on a potentially lethal animal without compromising the animal's own safety. Reptiles are especially difficult because they are particularly sensitive to the drugs. The longer they are under, the greater the risk they may not wake up.

"Reptiles like crocodilians, Komodo dragons, and large tortoises, even though they are big, have a metabolism similar to a small pond turtle or a green iguana," says the Zoo's chief veterinarian, Don Neiffer. "They metabolize drugs slowly, and their metabolism is tied to ambient temperature."

Before the vets could begin to put their hands on Dorothy, staff had to proceed with utmost caution. After she was lured into a crate at her exhibit, Neiffer inserted a pole syringe through a small opening in the crate and injected an anesthetic into her leg. When she stopped responding to pokes with a pole, keepers loaded the crate into a van for the trip to the Zoo hospital. There Neiffer injected more anesthetic into her tail.

After using tools to restrain the crocodile's head with a cable tie, the team asked all but the most essential personnel to leave the room. "We opened the back of the crate, grabbed her tail, and slowly pulled her out," says Matt Evans, assistant curator at the Zoo's Reptile Discovery Center (RDC). "She stood up and pulled herself forward, so we waited a few more minutes and tried again. This time she was still moving her legs, but she was asleep enough that we grabbed her back legs and tail, pulled them out straight, and duct-taped them. It's a very common way of restraining a crocodile."

It can be tricky to determine whether an animal is truly out cold. Veterinarians often test an animal by touching sensitive parts of the body, such as eyelids or bottoms of the feet. With large mammals, Neiffer prefers to focus on the ear, which is extremely sensitive. "I put the end of a pole in their ear and gently rub back and forth like I'm trying to start a fire," he says. "If anything is going to

twitch and tell me that maybe an animal is not quite asleep, it's the ear."

It pays to be cautious even around seemingly harmless creatures, Neiffer notes. "You may forget to wear eye protection because, well, it's a flamingo. But if a flamingo's beak hits you in the eye, you could lose your vision."

Hands-on Medicine

Keepers, who know the animals best, are on the front lines making sure it's safe for veterinarians to do their work. After Dorothy was pulled out of her crate and duct-taped, Matt Evans put both hands behind her neck and sat down on top of her. An assistant climbed on behind him.

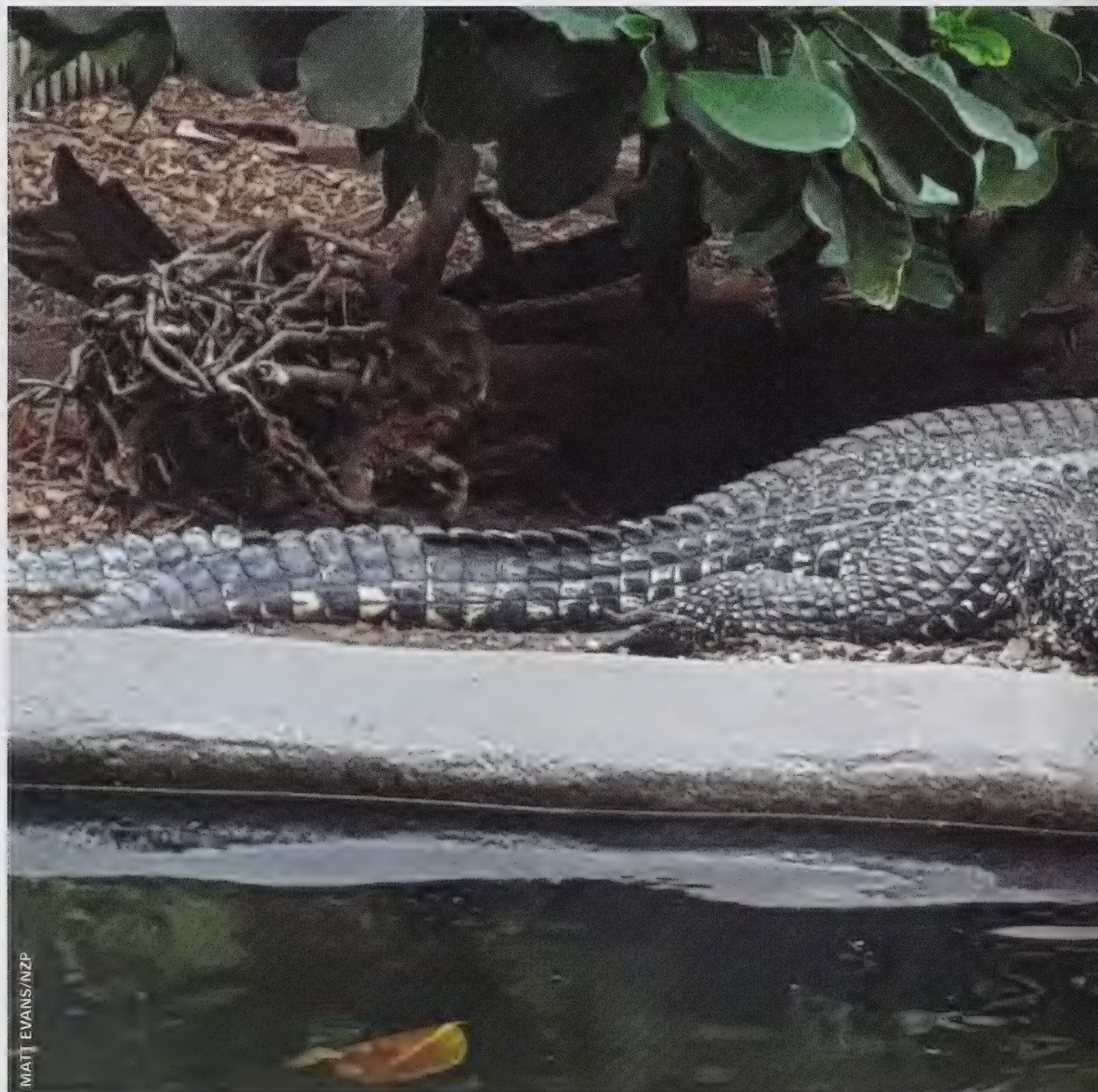
"When crocodiles feel pressure like that, they can't roll or spin or put up much of a fight," Evans says. "At that point, I put my hands over her eyes and let the vets come assess her jaw." When it was deemed safe, the team moved Dorothy

to the operating table, where it took four adults to pry her jaws open wide enough to insert a tube down her throat to administer anesthetic gas.

Evans continued to restrain her head and help hold her jaw open as Neiffer injected green dye into her nostrils. It dribbled from her nasal passage, confirming that there was indeed a hole that could admit water, over time causing pneumonia. Neiffer filled the hole with a fast-drying antibiotic cement and wrapped a cast around the jaw to keep everything in place. The entire procedure took four hours.

After spending the night in the hospital, Dorothy moved to an off-exhibit holding area to recover further. Within a few days, she was eating and drinking and behaving like a normally aggressive Cuban crocodile. Several weeks later, she was healing nicely, with healthy new tissue filling the hole.

As if restraining a nasty croc were not challenging enough, imagine when the



MATT EVANS/NZP

patient is a venomous snake—who's wide awake. (Snakes are seldom fully anesthetized except for surgery.) That's a task Evans has undertaken numerous times. At the hospital, it is his job to get the snake's head into a tube and hold it still while the vets examine it, take x-rays, or do whatever else is indicated.

"You may get comfortable working around these snakes and know their behavior, but you always have a healthy respect for them," Evans says. "I never take it lightly when I have my hands behind the head of a venomous snake."

When one of the Zoo's lions or tigers requires medical treatment, vets anesthetize it in its enclosure, and once again keepers are the first to make sure the cat is safely down. "While the door is still locked, we poke the animal with a long tool like the thin end of a broom handle to see if it reacts," says curator Craig Saffoe. "If not, we open the door and put the broad end

of a scrub brush tool against its neck. If it moves at all, we can react quickly and close the door. If there's no response, we invite the vets in."

Keepers continue to restrain a big cat until veterinarians are 100 percent sure it is under chemical control. "Sometimes an animal will have seizures when under anesthesia," Saffoe explains, "and with a lion or tiger, an involuntary muscle reaction can hurt or kill a person. We put in a mouth gag, which prevents the animal from closing its mouth, and we hold the paws so if there is a reaction we are in control."

Animals coming out of anesthesia also can pose a threat. Returning a recovering patient to its enclosure can trigger aggressive behavior among exhibit mates. They may chase or attack it, potentially endangering both animals and keepers. Even a usually docile animal is unpredictable when emerging from anesthesia, Neiffer warns. "Staff have to assume the animal is

disoriented, may not know who you are, may be angry or in pain, and is not going to be the same as usual."

Keeper Cautions

Daily animal care is less dramatic but no less demanding in terms of safety. Some creatures—lions, tigers, bears, apes, venomous snakes—are too risky for even casual contact. Keepers do not enter or put any body part into their enclosures. Since 2011, that list has included elephants.

4 Words

Zoo Director Dennis Kelly ends every staff meeting with four vital words:

"Stay safe out there!" That's sage advice for visitors as well as staff. A few rules of thumb can help you ensure that your visit is safe and enjoyable:

- Always remember that the Zoo's inhabitants are wild animals, who may act in unexpected or dangerous ways, especially if provoked.
- Watch children at all times.
- Never reach into an animal enclosure.
- Heed all signs, instructions, and warnings from staff and volunteers.

For its part, the Zoo meets or exceeds Association of Zoos and Aquariums requirements for enclosures and barriers. To boost safety in recent years, the Zoo has heightened fencing at the Great Cats exhibit and Great Ape House. Work will soon begin on enhancing barriers at the Cheetah Conservation Station. All staff and volunteers have been trained how to respond in the unlikely event of an animal escape. The Zoo also holds regular drills for scenarios ranging from health and weather emergencies to accidental or intentional contact between visitors and animals.



Defusing DANGER

After several staff deaths and injuries at other zoos, keepers at the National Zoo ceased direct contact with the herd.

Keepers are cautious even with smaller animals such as anteaters, bobcats, and caracals. Staff enter their enclosures only if the design allows the animals to escape human presence, lessening the likelihood of a dangerous encounter with an agitated or frightened creature.

Another safeguard for staff safety is the buddy system. Two people must be present when anyone is within reach of a dangerous animal. At RDC, no one who is unusually tired or feeling unwell is allowed to work around venomous animals.

Given the number of venomous animals in RDC, alarms throughout exhibit areas connect to a central panel that

alerts staff to the location of an emergency. In a case of snakebite, one responder would stay with the victim while another retrieved the appropriate antivenin.

The medication would be administered at a nearby emergency room. "Many people are allergic to the serum in anti-venin and can go into anaphylactic shock," Evans says. "We don't want someone to stop breathing without a doctor around."



MATT EVANS/NZP



MATT EVANS/NZP

TOP LEFT: A tussle with her enclosure mate left Cuban crocodile Dorothy with a hole in her jaw.

TOP RIGHT: Safely anesthetized and transported to the Zoo's veterinary hospital, Dorothy received several hours of treatment, including cleaning out the wound to prevent infection.

RIGHT: Veterinarian Dr. Katharine Hope applies a dressing to Dorothy's wound, which was patched with antibiotic bone cement.

FACING PAGE: Several weeks after being injured, Dorothy was healing nicely.



MATT EVANS/NZP

Practice Makes Possible

The key to keeping people safe “is the ability to elicit behaviors from animals in response to our commands,” says elephant manager Marie Galloway. Careful training makes it possible for staff to safely move animals around, tend to their daily needs, and perform routine medical checkups.

Keepers consistently use food rewards to train their charges to react to pointers, hand signals, and verbal cues. Many animals, even crocodiles, do respond to their names—at least when they’re so inclined. Elephants, which are highly intelligent, recognize about 50 spoken commands, Galloway says. “Elephants are very responsive to body positioning, even something as small as the way you turn your shoulder, because that’s how they interact with each other,” she adds.

Animals also are trained to move or present body parts so that keepers, veterinarians, and nutritionists can inspect everything from foot pads to the inside of their mouths. They learn to stand still for x-rays and even, in the case of a pregnant panda or orangutan, allow ultrasounds of their bellies.

Staff have even trained animals to hold still as blood is drawn. Some of the lions and tigers allow keepers to pull

4 Questions

What could be cuter and cuddlier than a baby lion or tiger? Those big eyes, that fuzzy face, that playful spirit—and the all-too-human temptation to forget that this is a wild, potentially dangerous animal. Staff at the Great Cats exhibit sometimes need to handle cubs as part of their duties, and curator Craig Saffoe instructs keepers to preface any hands-on encounter with four questions: Is handling the cub necessary to accomplish a task, such as weighing it or drawing blood? If the cub gets out of control, can I reasonably regain control? If yes, can I control it without getting hurt? If yes, can I control it without having to hurt the animal? If staff can’t answer those questions confidently, it’s time to regroup and rethink.

their tails out from underneath an enclosure barrier for blood draws. Short-tailed or tailless animals, such as bears and apes, are taught to insert a forearm into a sleeve that restricts their move-

ment while a vet draws blood. With elephants, an ear vein is a handy place to obtain blood. In many cases, blood samples give veterinarians the information they need without having to further immobilize the animal.

In most cases, veterinarians have the choice whether to treat a sick animal on site or at the hospital. Elephants are simply too big to transport to the hospital, so they are trained to walk into a restraint device that encloses them in a tight space and keeps them safe for most procedures. When sedation is needed, the animal usually remains standing, Galloway says. Barns and stalls are equipped with straps and hoists that can lift or support a sick or groggy elephant.

The key to working safely with elephants or any Zoo animals, Galloway says, is for staff to hone their training skills, be very, very consistent, and make sure the animal respects human leadership. And never, ever let your guard down, advises Dr. Neiffer. “The most dangerous animal, regardless of size, is the one where I forget what it can do or how it makes its living.” **SZ**

—*Longtime contributor* PHYLLIS MCINTOSH is a veteran Zoo volunteer.



LAUREN AUGUSTINE/NZP



Good day.

Great day.

BEAST BITS

CONNOR MALLON/NZP



fun fact

Green anacondas have eyes and nostrils on the top of their heads, so they can submerge most of their bodies in rivers and still breathe and hunt. They can stay down for 10 minutes at a time.

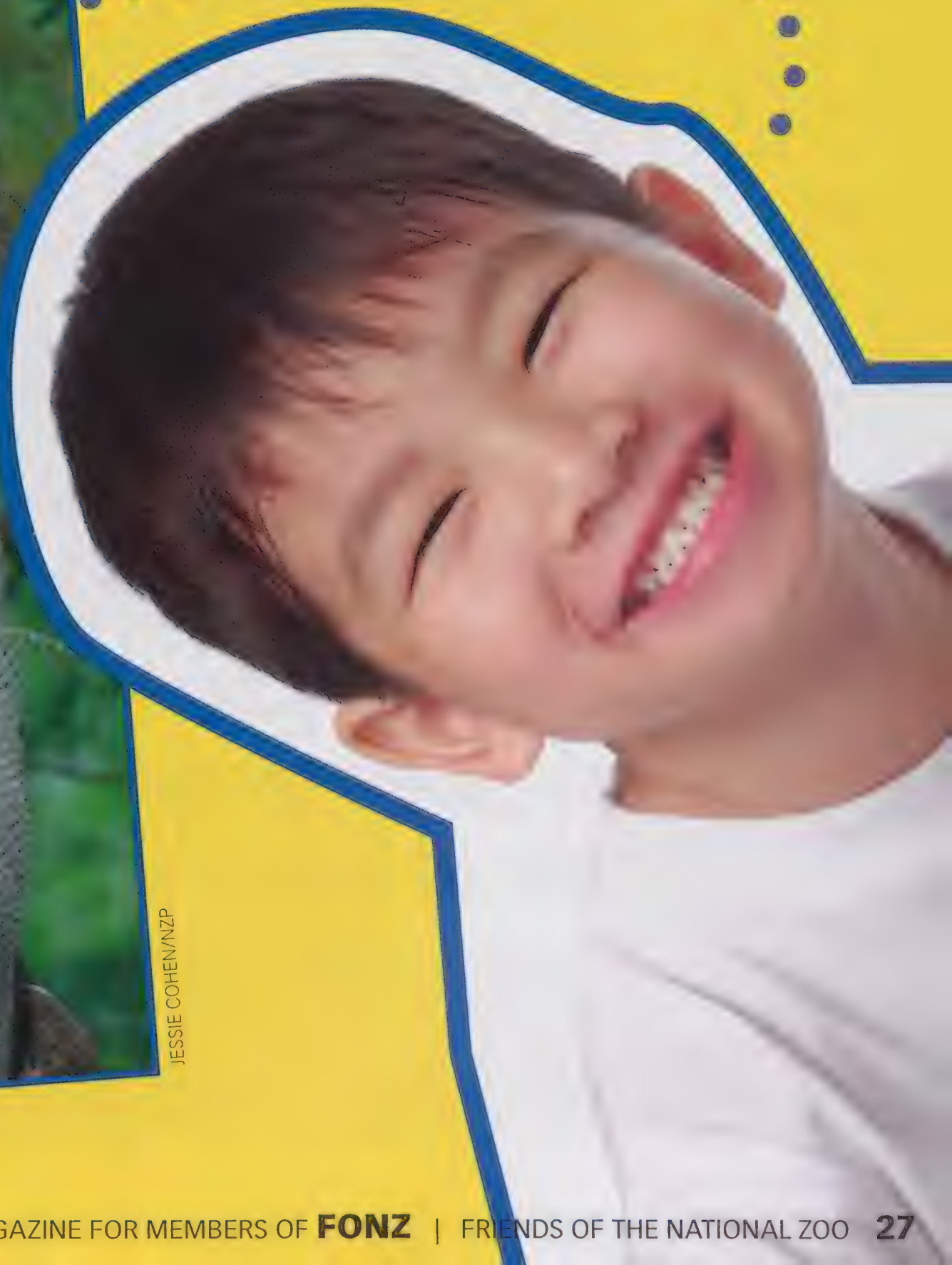
Who Wants a Hug?
The green anaconda is the heaviest snake in the world. Adults typically weigh a few hundred pounds, but the biggest specimens can be 30 feet long and weigh up to 1,000 pounds! Green anacondas in the wild eat large rodents, deer, sheep, dogs, and even the occasional jaguar! Not venomous, these supersize snakes grab their prey with their jaws. Then their muscular bodies slowly squeeze until the prey suffocates. The Zoo's green anacondas—which **you can see at the Reptile Discovery Center**—eat frozen rats and rabbits.

Wing Thing

Kori bustards are the largest birds that can fly. Males can weigh more than 40 pounds; females are about half that size. Native to eastern and southern Africa, kori bustards spend most of their lives on the ground, flying only to flee danger. Even then, they'll run if they can. The name "bustard" means "bird that walks." **You can see kori bustards at the Bird House.**



JESSIE COHEN/NZP





**CREATURE
FEATURE**

Living **LARGE**

BY PAMELA BUCKLINGER

**Social, strong,
and vulnerable,
Asian elephants
are a big deal.**

Elephants are the largest mammals living on land. (In the sea, some whales are bigger.) Asian elephants—found in India and Southeast Asia—are slightly smaller than their African cousins. Among Asian elephants, adult males are six to 12 feet tall and weigh 6,000 to 12,000 pounds. That means these supersize creatures can be as heavy as three cars!

WILD Sunscreen Elephant skin can be as thin as a sheet of paper in some parts of their bodies (such as their ears) and as thick as a book in others. Because they live in hot spots, elephants need to protect all of their skin from the sun. So they make their own sunscreen, by covering themselves with mud, dirt, and sand.

Take a STAND Elephants' legs have special features to hold up all their weight. Most mammals have legs that angle out from their hips, but elephants' legs drop straight down from their bodies like the columns under a building. Their bones are superstrong, allowing elephants to stand on their hind legs, go up or down steep slopes, and even sleep standing up!

TRUNK Show Elephant trunks have no bones and about 40,000 muscles. They're powerful enough to pick up a 700-pound boulder, but also precise enough to grab small items like sticks. Elephants also have a superhero's sense of smell, four times as sensitive as a dog's nose! They can sniff out watering holes from a few miles away.

Have YOU Herd? Elephants are extremely social. They touch each other just to say hi. When they need to communicate, they let out a low-pitched rumble—humans just barely hear it—that can travel about two miles. This can warn the herd about predators or signal when it's time to move on as a group.

Giant APPETITES Elephants are herbivores that love to eat grass, leaves, roots, and fruit. They sometimes knock over trees to get to the tasty leaves and bark at the top. In the wild, a large elephant male will eat about 300 pounds of food each day, washed down with about 50 gallons of water!

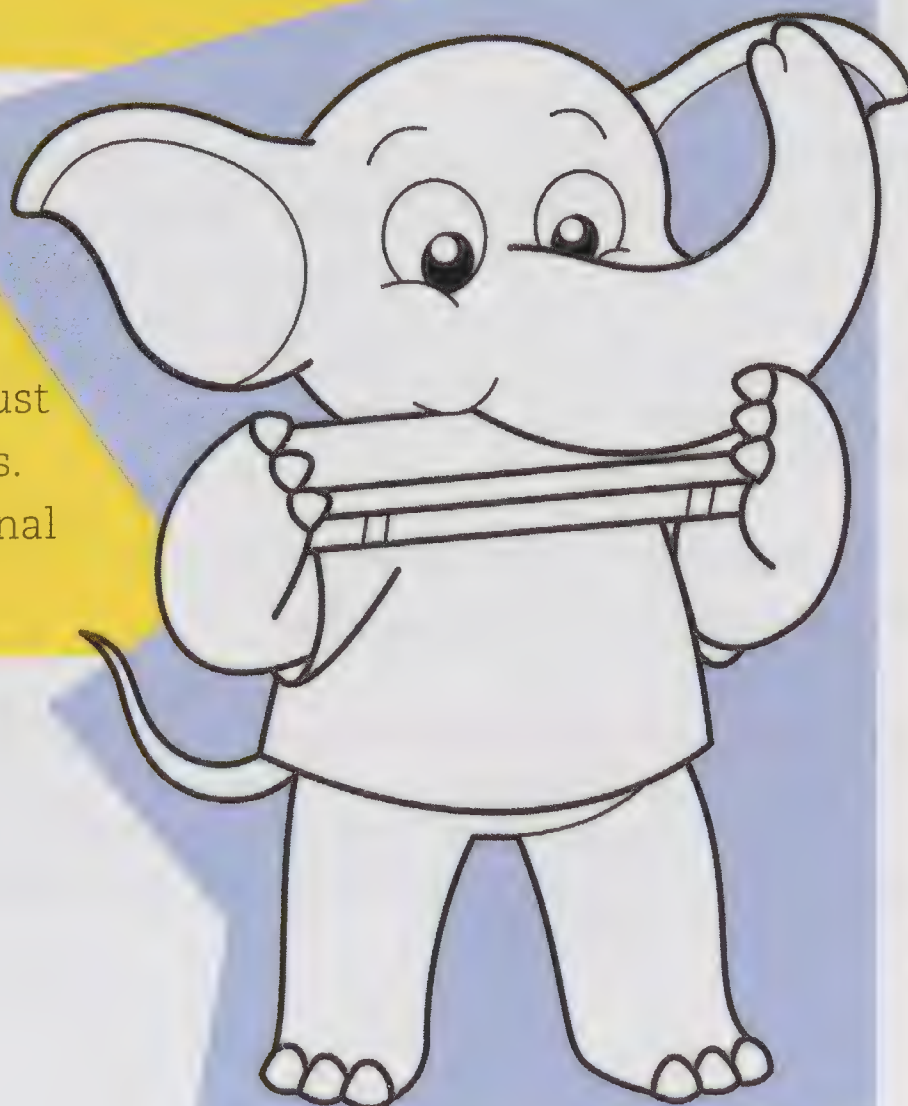
BIG Danger Asian elephants are endangered, with only 30,000 to 50,000 left in the wild. About half of those live in India. The big threat to Asian elephants is loss of habitat, as people chop down forests and plant crops. Elephants move around a lot—a couple of miles each day—so they're among the first animals to get pushed out when people move in.

At the ZOO The Zoo has six Asian elephants, all female. They range in age from Ambika (born in 1948) to Maharani (born in 1990). They all have unique personalities. Some, like Shanthi, even like to blow on musical instruments that the keepers put out as a form of enrichment. **You can see the Zoo's herd at Elephant Trails.**

YOUR TURN

WANT TO BE A MUSICIAN LIKE SHANTHI? You can make a harmonica at home, using just two Popsicle sticks, some construction paper, and three rubber bands:

1. Cut two strips of construction paper. Each should be an inch wide and three inches long.
2. Wrap the paper around the ends of one Popsicle stick.
3. Hold the strips in place by wrapping a rubber band around the stick lengthwise.
4. Place the second stick on top of the first, and secure it by wrapping the remaining rubber bands around the ends of both sticks.
5. Make some noise!



ADAM MASON/NZP

FONZ

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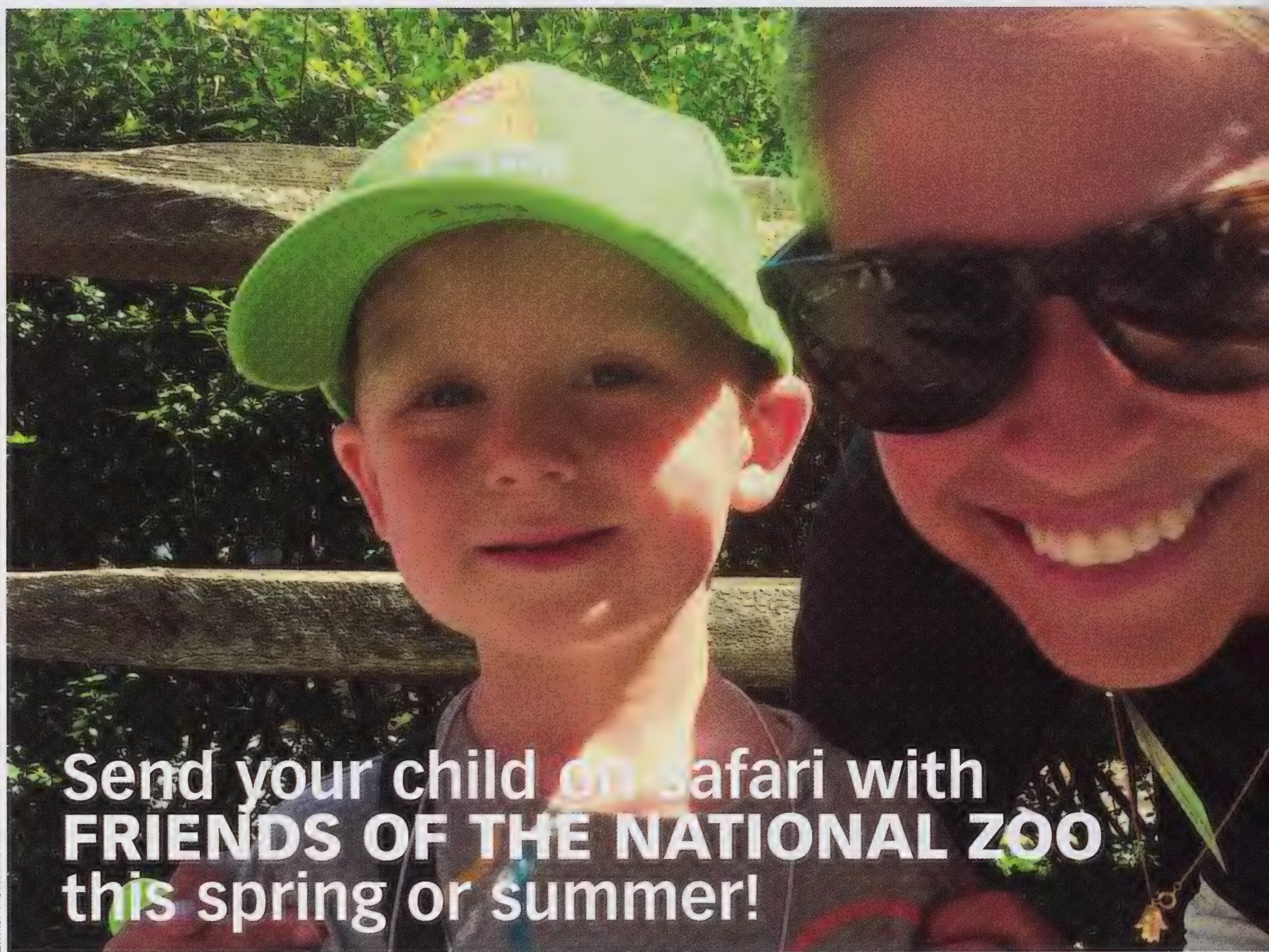
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EMILY PORTER/NZP

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>> Registration for non-members begins February 14 at 10 a.m.

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* Safari Day Camp is offered in four-day sessions the weeks of Easter (April 18–21) and Independence Day (July 3–7). A reduced fee applies for these sessions.

FONZ Members Save 20%

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at checkout
to claim your discount.



EMILY PORTER/NZP



EMILY PORTER/NZP

2017 SAFARI DAY CAMP SCHEDULES Safari Day Camp is offered during the spring, summer, and winter school breaks. Each week-long session runs from 9 a.m. to 3 p.m., Monday through Friday, excluding holidays. Before- and After-Camp care is offered on a limited basis.

Spring Safari Day Camps

Put a spring in your child's step with FONZ's Spring Safari Day Camp at the National Zoo. Camps are offered in week-long sessions from April 10 through April 21.

Learn more, explore the camp listings, and register online:
fonz.org/springsafari2017

Two separate week-long sessions—register for one or both!

>> April 10–14

>> April 18–21

(No camp on Monday, April 17)

Summer Safari Day Camp is accredited by the American Camp Association.



Summer Safari Day Camps

Make it a summer worth roaring about with FONZ's Summer Safari Day Camp at the National Zoo. Camps are offered in week-long sessions from June 26 through August 18. Accredited by the American Camp Association.

Learn more, explore the camp listings, and register online:
fonz.org/summersafari2017

Eight separate week-long sessions—register for one, two, several, or all eight!

>> June 26–30

>> July 3–7
(No camp on Independence Day)

>> July 10–14

>> July 17–21

>> July 24–28

>> July 31–August 4

>> August 7–11

>> August 14–18

Single Day Camp (Grades K-6)

Jan. 16 | Feb. 20 | Mar. 3

Make the most of your child's day off from school by exploring the "living classroom" at the National Zoo! Single Day Camp sessions will take place from 9 a.m. to 4 p.m. Before-Camp care and After-Camp care are not available for this program.

Learn more, explore the camp listings, and register at
fonz.org/single2017

It's the largest
conservation
camp on the East
Coast, *and your
child is invited.*

FONZ

2017 NATURE CAMP



sleep.



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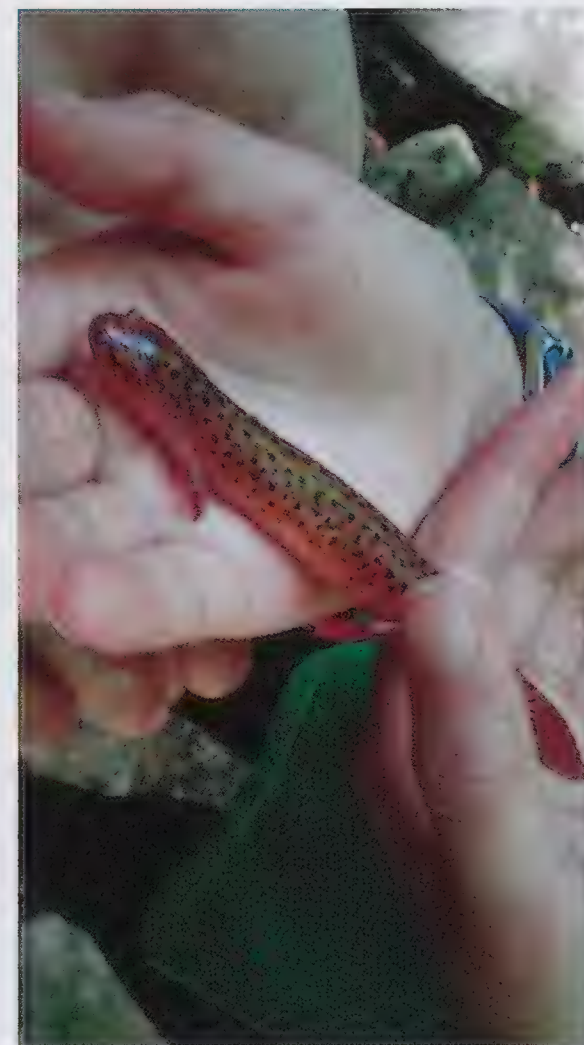
save.

FONZ NATURE CAMP

Make it a summer of exploration, discovery, and wide-open spaces for your child.



FONZ NATURE CAMP



FONZ NATURE CAMP

DATES AND REGISTRATION

DATES Nature Camp is a residential camp offered in three separate one-week sessions for campers entering grades 5–6 and 7–8, and one two-week session for campers entering grades 9–10:

>> **Entering grades 5–6:**
July 9–15

>> **Entering grades 7–8:**
July 16–22 or August 6–12

>> **Entering grades 9–10:**
July 23–August 5

REGISTRATION Camp sessions fill up quickly—register early to claim your child's spot.

>> Priority registration begins January 31 at 10 a.m.

Available to all current FONZ members at or above the Premier+ membership level. Upgrade your membership today to qualify for priority registration: fonz.org/join

>> Registration for all FONZ members begins February 7 at 10 a.m.

Available to all current FONZ members. Renew your membership today to ensure you will qualify: fonz.org/join

>> Registration for non-members begins February 14 at 10 a.m.

Learn more and register online: fonz.org/naturecamp2017

Through hands-on investigation, Nature Campers explore and discover local and global wildlife, conservation initiatives, research projects, and more.

Adventure awaits students entering grades 5–10 with FONZ Nature Camp at the Smithsonian Conservation Biology Institute (SCBI) in Front Royal, Virginia.

Founded on the concept that what we do has an impact and makes a difference, FONZ Nature Camp reunites campers with nature through exploration of the outdoors. Campers identify local plants and animals, monitor biodiversity, observe ecosystems at work, and see conservation science in action via campus tours and lectures from Smithsonian scientists.

FONZ Nature Camp is accredited by the American Camp Association (ACA) and is a past winner of the ACA Chesapeake section's Environmental Education Program Award.

FONZ Members Save!

Enter **SCBI2017** at checkout to claim your discount.

3 EASY STEPS TO END-OF-YEAR TAX PLANNING

1. Stop worrying. We can help.
2. Make a donation to animals at **fonz.org/endofyear**.
3. Enjoy your deduction!



FOR ANIMAL LOVERS

DONATE ONLINE BEFORE DECEMBER 31, 2016, TO RECEIVE YOUR TAX DEDUCTION THIS YEAR.

Friends of the National Zoo (FONZ) is a 501(c)3 nonprofit organization, and your donation is tax deductible to the fullest extent of the law.



A HOME *for the holidays!*

WHILE ONE OF THE ZOO'S ELEPHANTS WON'T FIT UNDER YOUR TREE THIS HOLIDAY, an Adopt a Species elephant package certainly will. Show the animal lover in your life how big your heart is with the gift that supports animal care and conservation around the world and delivers a cuddly friend. With several gift options—even one that includes a private meet-a-keeper tour—we have the perfect present for everyone on your list. **Order today at fonz.org/giftadopt. #ListChecked**

ADOPT A SPECIES TODAY.

FONZ CHILDREN'S CLASSES

Learning is WILD at the National Zoo!

FONZ classes use hands-on activities, crafts, and the Zoo's animal collection to help your child learn about environmental conservation and life science while strengthening important developmental and social skills. Whether you prefer a regular, weekly experience with your child or a one-time event for the family, you're sure to find a class to suit the needs of your young animal lover. Classes for ages 2-13 are now available.

Classes do not include behind-the-scenes visits or direct contact with the animals, but do use pelts, bones, feathers, and other touchable artifacts. Pre-registration is required for all children's classes.

For everyone's safety and enjoyment, unregistered children may not attend, with the exception of non-crawling infants.

Register Today!

See detailed descriptions and register at fonz.org/classes.

Enter discount code **TIGER2017** at the checkout screen to secure the member rate.

CLASS SERIES

FONZ Member: **\$150**

Non-member: **\$187.50**

WEEKEND CLASSES

FONZ Member: **\$28 per child**

Non-member: **\$35 per child**

CLASS SERIES Our class-series programs meet once a week for five weeks. Children learn about animals and the natural world while building important academic, developmental, and social skills. Saturday morning sessions are now available. See the full list of options at: fonz.org/classes

>> TADPOLES (ages 2-3 with adult)

Home Sweet Home

There's no place like home! Travel from treetops to river bottoms and even deep underground as we learn about the different kinds of places where animals live. Is your home more like a tiger's or a turtle's? Let's find out together!

Classes meet one morning each week for five weeks, 10-11:30 a.m., Jan. 9-Feb. 11.

1, 2, 3 to the Zoo!

All aboard the Zoo Train! Eric Carle's beloved animal counting book comes to life with lions, crocodiles, seals, and more. We'll count our way through the Zoo and add a new animal to our own Zoo Trains each week. We hope you'll choo-choo-choose to join us!

Classes meet one morning each week, 10-11:30 a.m., Feb. 27-Apr. 1.

>> FROGS (ages 3-5 with adult)

Animal Architects

Put on your construction hats and meet the busy builders of the National Zoo! We'll travel from the tops of the trees to deep underground to learn where the wild things live! Then we'll put our design skills to work and create a home for each animal!

Classes meet Tuesdays or Wednesdays, 1-2:30 p.m., Jan. 10-Feb. 8.

Feasts With the Beasts

This is a class you can surely sink your teeth into. Be our guest and learn about our favorite animals' favorite foods while satisfying your appetite for learning. Reservations required.

Classes meet Tuesdays or Wednesdays, 1-2:30 pm, Feb. 28-Mar. 29.

HOMESCHOOL CLASS SERIES (ages 5-13)

Homeschool classes at the National Zoo investigate a new theme each academic year. Each five-week class explores the theme from a new angle, discovering new connections between the animals and the ideas we study. Hands-on science experiments, inquiry-based learning, and Zoo Walks led by our expert teachers bring these concepts to life and address next-generation science standards. Visit fonz.org/classes to see more information and register your child.

Watery Wonders (Amphibians and Fish)

Scales, slime, and shape-shifting? Sign us up! Dive into the fascinating underwater environment of fish and amphibians, and discover the secret senses and hidden superpowers swimming just beneath the surface. We'll also learn why scientists think these amazing animals are critical to environmental conservation around the world.

5- to 9-year-olds:

Mondays, 10:30 a.m.-12:30 p.m.

7- to 13-year-olds:

Thursdays, 10 a.m.-12 p.m. Jan. 9-Feb. 9

Marvelous Mammalia (Mammals)

From the very small to the very tall, many marvelous mammals call the Zoo home. Get ready to learn about the wide variety of our furry friends as we explore what makes it so wonderful to be warm-blooded. We'll also learn about some of the National Zoo's projects to save critically endangered mammals and even reintroduce them to the wild!

5- to 9-year-olds:

Mondays, 10:30 a.m.-12:30 p.m.

7- to 13-year-olds:

Thursdays, 10 a.m.-12 p.m.

Feb. 27-Mar. 30

WEEKEND CLASSES

Weekend family programs are single classes designed for children and their parents to enjoy together! Enjoy interactive stations and a hands-on discussion, then visit the animals of the day.

Spots and Stripes Ages: 2-3

Animal patterns are pretty—pretty important, that is! Learn how spots and stripes help animals survive.

Dec. 4 (10-11:30 a.m.)

Bye-Bye, Birdie

Ages: 2-3

Some birds head south for winter. Let's fly over to the Bird House to say farewell to our feathered friends.

Dec. 11 (10-11:30 a.m.)

Presents for the Animals

Ages: 4-7

Learn about and make some favorite treats for the little critters of the Small Mammal House!

Dec. 18 (10 a.m.-12 p.m.)

Baby New Year! Ages: 2-3

Get to know the newest Zoo arrivals, from our baby orangutan to our sea lion pup.

Jan. 7 or 8 (10-11:30 a.m.)



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FONZ MEMBERS SAVE!

Use code **TIGER2017**
to claim your FONZ member discount!



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Just Like Me: Super Senses
Ages: 2-3

Look, listen, smell, and touch as we learn about some super-sensory species!
Jan. 15 (10-11:30 a.m.)

Curious George Goes to the Zoo Ages: 2-3

Put on your yellow hat! We're learning about some of our favorite curious little monkeys at the Zoo.
Jan. 22 (10-11:30 a.m.)

Panda Party Ages: 2-3 and 3-5

Bao Bao is moving to China in 2017. What might a panda pack for a trip like this? Let's learn all about pandas together!
January 29 or February 5 (10-11:30 a.m.)

Ele-Fun Ages: 2-3 and 3-5

The Zoo's gentle giants want you to join the herd! Try out your own trunk as we learn about elephants.
Feb. 12 or 18 (10-11:30 a.m.)

Thanks to Our Halloween Sponsors!

We appreciate your frightfully wonderful support for another year of haunting happiness.

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A FONZ MEMBERSHIP IS A
PASSPORT TO ADVENTURE

Send your friends or family on a fun-filled journey this holiday season with the gift that gives back. They'll enjoy all of the things you love about membership, like exclusive animal experiences, free parking, members-only celebrations, and discounts on shopping and event tickets. But the perks don't stop there! You and your travel companions will get a first-class feeling knowing you're supporting the Smithsonian's National Zoo's mission to save species. **Check your list twice at fonz.org/gift.**

FRIENDS OF THE NATIONAL ZOO





LINDA GLISSON/ FONZ PHOTO CLUB

A Dream Encounter

“With its big brown eyes, button nose, and striped red tail, the red panda is a photographer’s dream,” says FONZ Photo Club member Linda Glisson. “And like many dreams, it is elusive.”

Glisson stops by the red pandas’ enclosure on Asia Trail each time she visits the Zoo. One visit richly repaid her perseverance. Asa, the adventurous female, was avidly exploring. “She seemed almost as curious about me as I was about her,” Glisson recalls.

Technical Notes —

CAMERA: NIKON D7100; **LENS:** 70-300MM;
FOCAL LENGTH: 170 MM; **ISO:** 400; **EXPOSURE:** 1/400 SEC AT F/5

Share Your Photos!

Smithsonian Zoogoer welcomes FONZ members’ submissions of photos taken at the Zoo. Please send photos to Zoogoer@si.edu or post to @FONZNationalZoo on Twitter, Instagram, or Facebook. Your photo may be featured on the Zoo View page.

Join the Club!

Membership in the FONZ Photo Club is open to photographers of all skill levels. The group meets monthly to hear guest speakers and to share and discuss members’ work. Learn more at fonz.org/photoclub.

ZooLights
powered by Pepco

ZooLights is back and brighter than ever! With half a million twinkling, sculpted, and dancing lights, the Smithsonian's National Zoo comes alive with cheer this holiday season. A DC tradition, ZooLights welcomes you and your family with live music performances, snowless tubing, seasonal treats, and a dazzling laser light show! This free family-fun celebration begins the day after Thanksgiving and runs through New Year's Day. **Let your holidays sparkle!** nationalzoo.si.edu.



NOTICE

**THE NATIONAL ZOO WILL NOT
BE HIBERNATING THIS WINTER.**

Lead sponsor: PEPCO | **Additional partners:** BigBus Tours, The Coca-Cola Company, Comcast, Fresh 94.7 FM, GEICO, Giant Food, Metro, NBC4, The Washington Post/KidsPost and Washingtonian Magazine.




Friends of the National Zoo, PO Box 37012, MRC 5516, NW, Washington, DC 20013-7012, www.fonz.org



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Thank you for being a FONZ member.
Your membership supports animal care,
science, conservation, and more.



helloooooo...
holiday socks?
anyone? anyone?

Gift Responsibly

You know the feeling: struggling to smile as you open another #giffail. Ditch those awkward moments and make holiday giving matter—for you and the animals you love. Join Conservation Nation, where you can start your own fundraising page and help save wildlife around the world. Just email your friends and family, asking them to donate. Then *bam!* You're helping animals. This year you won't need to say, "You really shouldn't have."

CONSERVATION NATION • FONZ.ORG/GIVE